

**AMENDMENT NO. 1
TO
PROGRESSIVE DESIGN-BUILD CONTRACT
(AECOM Infrastructure and WML, a Joint Venture)**

This Amendment No.1 to the Progressive Design-Build Contract ("Amendment No.1) by and between the City of Stockton ("City") and AECOM Infrastructure and WML, a Joint Venture ("Contractor") is made and entered into on _____, 2019.

WHEREAS, the City and Contractor entered into a Progressive Design-Build Contract for the City's Regional Wastewater Control Facility Project (the "Project") dated January 23, 2017 ("the Agreement"); and

WHEREAS, the Agreement is separated into Phase 1 (Design Services through 60-75% completion) and Phase 2 (completion of Design Services and Construction); and

WHEREAS, the City and Contractor agree Phase 2 of the Agreement needs to be separated into a Phase 2A (completion of design documents to 90% completion) and Phase 2B (construction and related design services); and

WHEREAS, this amendment is for the mutual benefit of City and Contractor;

NOW, THEREFORE, the City and Contractor agree as follows:

1. The Agreement, and specifically Section 00500 of the Agreement and the exhibits attached thereto, is amended in the manner set forth as attached hereto as Attachment A.
2. Except as stated herein, all other terms and conditions of the Agreement remain unchanged.
3. If any conflict exists between the terms and provisions of the Agreement and the terms and provisions of this Amendment, the terms and provisions of this Amendment shall govern.

4. All capitalized terms used in this Amendment but not expressly defined in this Amendment shall have the meanings ascribed to them in the Agreement.

5. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same document. Delivery of an executed signature page of this Amendment by electronic means shall be effective as delivery of a manually executed counterpart hereof.

IN WITNESS WHEREOF, the parties have executed this Amendment on the date hereinabove written.

CITY OF STOCKTON

Kurt Wilson, City Manager

ATTEST:

Christian Clegg, Interim City Clerk

APPROVED AS TO FORM:

City Attorney

**AECOM INFRASTRUCTURE and
WML, a Joint Venture**

By: _____

Print name

Title

SECTION 00500 – PROGRESSIVE DESIGN-BUILD CONTRACT

THIS CONTRACT ("Contract") is made and entered into on January 23, 2017 by and between AECOM Infrastructure and WML, a Joint Venture, with a business address of 3925 Progress Drive, Rocklin, California 95765, hereinafter called "CONTRACTOR" and CITY OF STOCKTON, a municipal corporation, hereinafter called "CITY."

W I T N E S S E T H:

WHEREAS, the Contract for said work was regularly awarded to CONTRACTOR, by Council Resolution No 2016-11-15-1503 on November 15, 2016.

NOW, THEREFORE, in consideration of the promises and of the mutual covenants herein contained, the parties hereto expressly agree as follows:

1. CONTRACTOR agrees:

(a) To do and perform the design and construction work and services and furnish all the labor, materials, tools, equipment, and insurance pursuant to the terms and conditions of the Contract Documents (as defined in Article 1(k) below) required for the Progressive Design-Build Services for the Regional Wastewater Control Facility Project ("Project"), subject to CITY and CONTRACTOR agreeing to a Phase 2B Guaranteed Maximum Price (GMP) and Phase 2B Contract Time (as defined in Articles 1(f) and (g) below, respectively) for the Phase 2B portion of the Work. CITY is contracting with CONTRACTOR, whose key personnel and key subcontractors are set forth in Exhibit A, for the following Work: design and construction of a progressive design build project consisting of wastewater treatment plant components ("Facilities") of the Project. The Work includes development and preparation of all design documents and construction of the Project, including construction administration and management services in Phases 1, 2A and 2B, and the Work shall comply with and meet the Performance Requirements as set forth in Exhibit B hereto. Phases 1 and 2A of the Work shall consist of the initial design of the Project and negotiation of the Phase 2B GMP and Phase 2B Contract Time. Phase 2B of the Work shall consist of the final design and construction of the Project, which shall take effect only if CITY and CONTRACTOR agree to a Phase 2B GMP and Phase 2B Contract Time, and CITY exercises the OPTION under Article 5 below.

The general description of the Work which will be performed in Phases, shall include, but not be limited to, the following:

Phase 1 – Design Development and Preparation of 60% to 75% Construction Documents

- Project management for the duration of Phase 1
 - Conceptual and a significant degree of detailed design of the wastewater treatment facilities, including technology selection and equipment and materials specification; the Wastewater Treatment Plant (WWTP) design criteria shall ensure compliance with the Performance Requirements as described and identified in this Contract and Exhibit B.
 - Evaluation of alternatives for wastewater treatment technologies, other WWTP equipment and electromechanical systems, architectural statements, and other elements of the Project that affect construction and life cycle costs, Contract performance, and CITY goals for the Project
 - Review of background and reference documents and preparation of Basis of Design Reports (“BDRs”) and other work products as defined in this Contract, with major milestones at 10%, 25%, 50%, and 60-75% completion, and sufficient process and instrumentation diagrams (“P&IDs”), site plans, building floor plans, specifications and other supporting documents to facilitate preparation of a Phase 2B GMP and Phase 2B Contract Time Proposal at 60-75% completion of design packages
 - Advising the CITY and facilitating CITY participation in all material decision making about the Facilities as such decision making may affect the Project scope and value, including CITY participation in select meetings and communications
 - Preparation of the Supervisory Controls and Data Acquisition (“SCADA”) system and security/surveillance system design for the Facilities in conformance with the City’s SCADA Master Plan
 - Value engineering and constructability reviews
 - Coordination and compliance with the CITY’s California Environmental Quality Act (“CEQA”) document
 - Preliminary preparation of all necessary permit applications and facilitation of regulatory agency approval of all permits that are CONTRACTOR’s responsibility (CITY will sign the permit applications, furnish permit application fees, and attend permitting coordination and review meetings with regulatory agencies as necessary)
 - Solicitation of competitive proposals for the major trades, design packages, and material and equipment procurement, preparation of a firm Phase 2B GMP and Phase 2B Contract Time, as defined and required in Articles 1(f) and (g) below, and negotiation of the Phase 2B GMP and Phase 2B Contract Time with CITY in accordance with the Contract
 - Negotiation of the Contract amendment, as defined in Article 1(f) below, for Phase 2B
- In addition to the services identified above, CONTRACTOR will also perform all Phase 1 services identified in and reasonably inferred by this Contract, the RFP, and all Contract Documents for the Project. In particular, see the scope of services set forth in Exhibit C hereto.

Phase 2A – Preparation of 90% Construction Documents

- Project Management for 90% Design
- Supplemental Studies and Alternative Analyses
- Field Investigations
- Permitting
- 90% Design (Procurement of Engineering Services for Selected Vendor and 90% Design)

In addition to the services identified above, CONTRACTOR will also perform all Phase 2A services identified in and reasonably inferred by this Contract, the RFP, and all Contract Documents for the Project. In particular, see the scope of services for Phase 2A detailed in Exhibit N hereto.

Phase 2B – Final Design and Construction Phase (contingent upon satisfactory completion of Phase 1 services and successful negotiation of and agreement on a Phase 2B GMP and Phase 2B Contract Time):

- Completion of final design packages as necessary for physical construction of the Facilities
- Completion of permitting services
- Procurement of equipment and materials separately from construction contracts as necessary to achieve project delivery schedule
- SCADA and security/surveillance system integration with the existing wastewater system and programming and SCADA system integration
- Compliance with all permitting terms and conditions
- Compliance with all environmental mitigation requirements as defined in the Scope of Work
- Site safety and security during construction including coordination of site visits
- Completion of start-up and all required acceptance tests
- Provision of an operations and maintenance (“O&M”) manual, as-built drawings and other project documentation as defined in the Exhibits
- Training of the CITY-designated and licensed O&M workforce to explain the Facilities design intent, the Operations Manual, the equipment manufacturers’ recommendations, and the CMMS
- Completion of the project within the Phase 2B GMP and Phase 2B Contract time and in accordance with all Contract requirements
- Provision of comprehensive QA/QC plan for Phase 2B

In addition to the services identified above, CONTRACTOR will also perform all Phase 2B services and Work identified in and reasonably inferred by this Contract, the RFP, and the Contract Documents for the Project. In particular, see the scope of services identified in Section 3.5 of the RFP. The final scope of

services for which will be identified by Contract Amendment following successful negotiation of a Phase 2B GMP.

(b) To do and perform the work and services contemplated hereby in a good and professional manner to the complete satisfaction of the Municipal Utilities Director (“Director”) of the City of Stockton.

(c) CONTRACTOR shall, during the life of the contract, take out and maintain insurance coverage as required herein under and by the General Conditions and all other Contract Documents with insurance carriers authorized to transact business in the State of California as will protect CONTRACTOR or any subcontractor or anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable from claims for damages because of bodily injury, sickness, disease, or death of its employees or any other persons, or for damages because of injury to or destruction of tangible property including loss of use resulting therefrom.

The minimum limits of liability for such insurance coverage, which shall include comprehensive general and automobile liability, including contractual liability assumed under the contract, shall be in the minimum amounts mandated by Section 00820 – Liability and Insurance Requirements of the Front End Contract Documents. Front End Contract Documents are Division 0 (Sections 00100 through 00820) and Division 1 (01010-01700). Defined terms are included in this Contract and in Section 01090 of the Division 1 Front End Contract Documents.

Such liability insurance policies shall name CITY as an additional insured by separate endorsement and shall agree to defend and indemnify CITY against loss arising from operations performed under the Contract and shall provide that written notice of any changes or cancellation in coverage shall be provided to CITY at least thirty (30) days prior to the effective date of such change or cancellation.

CONTRACTOR shall obtain, and keep in full force and effect, Workers’ Compensation Insurance necessary in connection with the performance of this Contract to protect itself and employees under the Workers’ Compensation Insurance and Safety Act and CONTRACTOR shall supply CITY with a suitable statement certifying to the protection and defining the terms of the policy prior to undertaking the work contemplated herein.

Before permitting any subcontractors to perform work under the contract, CONTRACTOR shall require subcontractors to furnish satisfactory proof that insurance has been issued and is maintained as may be applied to each subcontractor's work. The CONTRACTOR may adjust the Subcontractors’ coverage limits based on the size and scope of Subcontractor services or work.

(d) CITY and all officers and employees thereof connected with the work, including but not limited to the Municipal Utilities Director and/or the Director’s designee, shall not be answerable or accountable in any manner, for any loss or damage that may happen to the Work or any part thereof, for any loss or damage to any of the materials or other things used or employed in performing the Work,

for injury to or death of any person, either workers or the public, or for damage to property from any cause which might have been prevented by CONTRACTOR or CONTRACTOR's workers, or anyone employed by CONTRACTOR.

CONTRACTOR shall be responsible for any liability imposed by law and for injuries to or death of any person or damage to property resulting from defects or obstructions or from any cause whatsoever during the progress of the Work or any time before its completion and final acceptance.

The duty of CONTRACTOR to indemnify and save harmless, as set forth in the Contract Documents, shall include the duty to defend, as set forth in Section 2778 of the California Civil Code, provided, however, that nothing herein shall be construed to require CONTRACTOR to indemnify CITY against any responsibility or liability in contravention of Section 2782 of the California Civil Code.

(e) The Contractor's indemnity obligations wherever referred to or identified in the Contract Documents are to be read in conjunction with, and shall not supersede, the indemnity provision stated in Section 00820 – LIABILITY AND INSURANCE REQUIREMENTS.

(f) To do and perform the Phase 1 Work contemplated hereby and set forth in Exhibit C to furnish all labor, services, materials, tools and equipment necessary therefor at the prices herein specified, to wit: Subject to the provisions of the Contract Documents, CITY shall pay to CONTRACTOR, for performance of the Phase 1 Work, Five Million Three Hundred Forty Nine Thousand (\$5,349,000), the "Phase 1 Lump Sum Contract Price" as set forth in Exhibit D.

To do and perform the Phase 2A Work contemplated hereby and set forth in Exhibit N to furnish all labor, services, materials, tools and equipment necessary therefor at the prices herein specified, to-wit: Subject to the provisions of the Contract Documents, CITY shall pay to CONTRACTOR, for performance of the Phase 2A Work, the "Phase 2A GMP" as set forth in Exhibit O.

CITY shall pay for the performance of the Work for Phase 2B, in an amount that CITY and CONTRACTOR will negotiate and agree to during the progression of Phase 2A or at the conclusion of Phase 2A ("Phase 2B GMP") if the City agrees to exercise the OPTION under Article 5 below. CONTRACTOR agrees that the portion of its Phase 2B GMP for Phase 2B Final Design and Engineering Services During Construction and Construction Management Services as set forth in Exhibit E shall be performed for the prices set forth in Exhibit F and Exhibit H.

CONTRACTOR shall solicit and procure at least three competitive proposals from pre-qualified companies for all major subcontract packages, trades, and material and equipment procurements, in preparing and negotiating the final Phase 2B GMP. "Major" is defined as a trade, design package, and/or material and equipment procurement whose costs, respectively, exceed one-half (1/2) of one percent (1%) of the Phase 2B GMP.

Contractor shall provide the bids to CITY during the negotiation of the Phase 2B GMP. If CONTRACTOR is unable to procure at least three bids as required hereinabove, it shall provide to the CITY written detail on the steps taken by CONTRACTOR to obtain the bids, including, but not limited to, showing that CONTRACTOR solicited bids from at least three qualified subcontractors or suppliers, and a written explanation for why it is reasonable for CONTRACTOR not to have obtained the required three bids.

For Work that CONTRACTOR intends to self-perform, CONTRACTOR shall provide, in addition to its detailed bid/estimate for its self-performed work, evidence that the CONTRACTOR'S bid/estimate is at current market value. This shall be accomplished by providing actual estimates, costs, and labor production rates utilized in other similar CONTRACTOR constructed projects, or at the sole discretion of the City, by obtaining from CONTRACTOR, two comparable bids from other contractors for the self-performed work to allow the CITY to compare and evaluate the CONTRACTOR's self-performance work price.

The above identified bidding requirements shall not preclude CONTRACTOR from requesting from the CITY permission to seek sole-source procurement of equipment, materials and subcontractors should CONTRACTOR prove to CITY, in CITY's sole discretion that said procurement is in the best interests of the City. Further, for each instance in which CONTRACTOR does not use the lowest monetary bid obtained for each major design package, trade and/or equipment and material procurement, CONTRACTOR must provide to the CITY a written explanation showing why it is in the best interests of the CITY for CONTRACTOR not to use the lowest monetary bid. CONTRACTOR may also provide an allowance for certain major design packages, trades and/or equipment and material procurements, pursuant to Section 01210 – Allowances, found in the Front End Documents, but, if an allowance is provided, CONTRACTOR must provide to the CITY, for the CITY's acceptance, written detail on why an allowance was provided in lieu of CONTRACTOR procuring and providing to the CITY the required three bids.

If CONTRACTOR does not provide proof to CITY that it has taken all reasonable efforts to bid all major design packages, trades, and equipment and material procurements, or provide to the CITY an acceptable written explanation for why CONTRACTOR is either not using lowest monetary bid(s) or is providing an allowance in lieu of bids, CITY reserves the right not to exercise the OPTION as identified below.

The final Phase 2B GMP and Phase 2B Contract Time for shall be incorporated into this Contract by amendment, and the Work for Phase 2B shall be performed pursuant to the terms of this Contract.

For each subcontractor or supplier whose contract value will exceed 3% of the total Phase 2B GMP, CONTRACTOR shall provide acceptable qualifications information at the time CONTRACTOR provides its Phase 2B GMP to CITY.

(g) To begin the Work contemplated hereby after this Contract has been approved as to form by the City Attorney of the City of Stockton and after receipt by CONTRACTOR of the Notice to Proceed.

CONTRACTOR shall commence the Work for Phase 1 on the date specified in the Notice to Proceed for Phase 1, and shall fully complete the Work within four hundred fifty four (454) calendar days as set forth in Exhibit I. The time for CONTRACTOR to complete Phase 1 Work is the "Phase 1 Contract Time." The Phase 1 Contract Time is defined when CONTRACTOR achieves Substantial Completion of Phase 1 pursuant to General Conditions Section 00700-8.6 and shall include 60 calendar days for negotiation of the Phase 2A/2B GMP.

CONTRACTOR shall commence the Work for Phase 2A on the date specified in the Notice to Proceed for Phase 2A, and shall fully complete the Work within two hundred eighty-five (285) calendar days as set forth in Exhibit P. The time for CONTRACTOR to complete Phase 2A Work is the "Phase 2A Contract Time." The Phase 2A Contract Time is defined when CONTRACTOR achieves Substantial Completion of Phase 2A pursuant to General Conditions Section 00700-8.6 and does not include thirty (30) calendar days for negotiation of the Phase 2B GMP. The "Phase 2B Contract Time" is defined as the number of calendar days for the CONTRACTOR to achieve Substantial Completion of Phase 2B pursuant to General Conditions Section 00700-8.6.

Assuming the CITY exercises the OPTION described herein below and issues a Notice to Proceed for Phase 2B to CONTRACTOR, the CONTRACTOR shall commence the Work for Phase 2B on the date specified in the Notice to Proceed for Phase 2B, and shall achieve Substantial Completion of the Phase 2B Work in the Phase 2B Contract Time. The Phase 2B Contract Time will be incorporated into this Contract by amendment.

By signing this agreement, CONTRACTOR represents to CITY that (i) the Phases 1 and 2A Contract Time and Phase 2B Contract Time are reasonable for completion of the Work of the respective Phases; and (ii) CONTRACTOR will complete the Work within the Phases 1 and 2A Contract Time and Phase 2B Contract Time, as applicable.

If CITY decides not to exercise the OPTION for CONTRACTOR to perform Phase 2B Work, CONTRACTOR shall complete all final design documents, in accordance with Exhibit J hereto and Article 5(b)(i) below, to allow for competitive bidding of the Phase 2B construction work in the Final Design Documents Contract Time. The "Final Design Documents Contract Time" is defined as the calendar days necessary for CONTRACTOR to complete the design in accordance with Exhibit J and Article 5(b)(i) below. The Final Design Documents Contract Time shall be within one hundred fifty (150) calendar days of a formal Notice to Proceed by CITY that it is taking the "off-ramp" pursuant to Article 5 below, and requests that CONTRACTOR complete the final design documents. The Notice to Proceed by CITY that it is taking the "off-ramp" pursuant to Article 5 below shall be provided by CITY

no later than 30 calendar days after the expiration of time the CITY can exercise the OPTION under Article 5 below (which is 90 calendar days from the expiration of the Phase 2A Contract Time).

It is agreed by the parties to the Contract that in case all the work called for under the Contract in all parts and requirements, is not finished or completed within the number of calendar days as set forth herein, damage will be sustained by the CITY, and that it is and will be impracticable and extremely difficult to ascertain the actual damage which CITY will sustain in the event of and by reason of such delay; and it is therefore agreed that CONTRACTOR will pay to CITY the following sums:

If CONTRACTOR fails to complete the Work for Phase 1 within the Phase 1 Contract Time and for Phase 2A within the Phase 2A Contract Time, CONTRACTOR shall pay to CITY, as liquidated damages and not as a penalty, the amount indicated below as "Liquidated Damages Daily Rate for Phases 1 and 2A" of each calendar day after expiration of Contract Time that Work for Phase 1 and 2A remains incomplete.

If CONTRACTOR fails to complete the Work for Phase 2B, within the Phase 2B Contract Time, CONTRACTOR shall pay to CITY, as liquidated damages and not as a penalty, the applicable amount(s) indicated below as "Liquidated Damages Daily rate for Phase 2B Substantial Completion" for each calendar day after the expiration of the Phase 2B Contract Time that Work for Phase 2B remains incomplete.

If CONTRACTOR fails to achieve Phase 2B Final Completion (as defined in General Conditions Section 00700-8.9), CONTRACTOR shall pay to CITY, as liquidated damages and not as a penalty the applicable amount(s) indicated below as "Liquidated Damages Daily Rate for Phase 2B Final Completion" for each calendar day that CONTRACTOR fails to achieve Phase 2B Final Completion.

If CITY does not exercise the OPTION for Phase 2B, and CONTRACTOR fails to meet the Final Design Documents Contract Time, CONTRACTOR shall pay to CITY as liquidated damages and not as a penalty the applicable amount(s) indicated below as "Final Design Documents Liquidated Damages Daily Rate" for each calendar day that CONTRACTOR fails to achieve the Final Design Documents Contract Time.

CITY and CONTRACTOR agree that if the Work is not completed within the above defined contract times, CITY's damages would be extremely difficult or impracticable to determine and that said amounts indicated below are reasonable estimates of and reasonable sums for such damages. CITY may deduct any liquidated damages due from CONTRACTOR from any amounts otherwise due to CONTRACTOR under the Contract Documents. This provision shall not limit any right or remedy of CITY in the event of any other default of CONTRACTOR other than failing to complete the Work within the Contract Time.

Liquidated Damages Daily Rate for Phases 1 and 2A: \$5,000.00

Liquidated Damages Daily Rate for Phase 2B Substantial Completion: \$10,000.00.

Liquidated Damages Daily Rate for Phase 2B Final Completion: \$5,000.00

Final Design Documents Liquidated Damages Daily Rate: \$5,000.00.

Except as otherwise specifically provided herein, such delay liquidated damages shall constitute the sole and exclusive remedy for delay regardless of legal theory. In addition, the CONTRACTOR's liability for liquidated damages in Phases 1 and 2A shall not exceed 20% of the Phase 1 Lump Sum Contract Price or the Phase 2A GMP, respectively, and liquidated damages in Phase 2B shall not exceed 5% of the Phase 2B GMP, provided however that this limitation shall not limit the City's recovery of non-delay related damages otherwise due under this Contract as a result of CONTRACTOR's default or termination for cause. The limitation shall be included under the aggregate limitation of liability included under Section 6 below.

It is further agreed that in case the Work called for under the Contract is not finished and completed in all parts and requirements within the number of calendar days specified, the City Council shall have the right to increase the number of calendar days or not, as may best to serve the interest of CITY, and if they decide to increase the said number of calendar days, they shall further have the right to charge to CONTRACTOR, CONTRACTOR's heirs, assigns or sureties, and to deduct from the final payment for the work liquidated damages set forth above.

A calendar day shall not include, nor shall CONTRACTOR be assessed with liquidated damages during any delay beyond the time named for the completion of the work caused by acts of God or of the public enemy, acts of CITY, fire, floods, delays caused by permitting agencies/entities, epidemics, quarantine restrictions, strikes, and freight embargoes, or delays of subcontractors due to such causes provided that CONTRACTOR shall notify the Director in writing of the causes of delay within thirty (30) days from the beginning of any such delay, and the Director shall ascertain the facts and the extent of the delay, and Director's findings of the facts thereon shall be final and conclusive, unless appealed under the dispute provisions.

If CONTRACTOR is delayed by reason of alterations made to the specifications, or by any act of the Director or of the CITY, not contemplated by the Contract, and said delay is deemed to be an Excusable Delay pursuant to General Conditions Section 00700-6.3, the time of completion shall be extended proportionately and CONTRACTOR shall be relieved during the period of such extension of any claim for liquidated damages, engineering or inspection charges or other penalties.

If CONTRACTOR is entitled to an increase in the Contract Sum as a result of a Compensable Delay, determined pursuant to General Conditions Section 00700-6.0, the Contract Sum will be increased by the sum indicated below per calendar day for each day for which such compensation is payable. The below daily delay rates shall include all delay damages sought by CONTRACTOR, its design professionals, its subcontractors/suppliers of every tier, and all other entities or persons CONTRACTOR contracts with to perform Work under this Contract, and General Conditions Section 00700-6.4.3. This Article will apply only to the extent that the CONTRACTOR fulfills requisites proving entitlement to Compensable Delay. The delay daily rate for Phase 1 is the rate provided by CONTRACTOR in its Proposal. The delay daily rate for Phase 2A is the same rate as for Phase 1. The delay daily rates for Phase 2B shall be provided by CONTRACTOR when it submits its Phase 2B proposal, and shall be incorporated into this Contract by the same Contract amendment which will include and add the Phase 2B GMP and Phase 2B Contract Time.

Compensable delay daily rate for Phase 1: \$0 for first 60 calendar days, \$300 per calendar day thereafter.

(h) To conform strictly with the provisions of Division 2, Part 7, Chapter 1, Article 2, of the Labor Code of the State of California.

To forfeit as a penalty to CITY the sum of TWENTY-FIVE AND NO/100 (\$25.00) DOLLARS for each laborer, worker, or mechanic employed by CONTRACTOR, or by any subcontractor under CONTRACTOR, in the execution of this contract, for each calendar day during which any laborer, worker, or mechanic is required or permitted to work more than eight (8) hours in violation of the provisions of the Labor Code of the State of California.

(i) That all sums forfeited under the provisions of the foregoing sections shall be deducted from the payments to be made under the terms of this contract.

(j) CONTRACTOR and any subcontractor shall pay each employee engaged in the trade or occupation not less than the hourly prevailing wage rate. In accordance with the provisions of Section 1770 of the Labor Code, the Director of Department of Industrial Relations of the State of California has determined the general prevailing rates of wages and employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Section 1773.8, apprenticeship or other training programs authorized by Section 3093 and similar purposes applicable to the work to be done. Said wages are available through the City of Stockton, Municipal Utilities Department, 2500 Navy Drive, Stockton, California, 95206. CONTRACTOR performing the work under this contract shall obtain a copy of the wage rate determination and shall distribute copies to each subcontractor. As the wage determination for each craft reflects an expiration date, it shall be the prime CONTRACTOR and each subcontractor's responsibility to ensure that the prevailing wage rate of concern is current and paid to the employee.

(k) Without superseding, limiting, or restricting any other representation or warrant set forth elsewhere in the Contract Documents, or implied by operation of law, the CONTRACTOR makes the following covenants and representations to CITY:

CONTRACTOR, including its design professionals and subcontractors, is properly certified, licensed and qualified to perform the Work required by the Contract Documents, and CONTRACTOR shall procure a City of Stockton Business License to be in effect during the entirety of the Project.

CONTRACTOR accepts the relationship of trust and confidence with the CITY established by the Contract Documents. CONTRACTOR will cooperate with CITY.

CONTRACTOR, including its design professionals, has carefully examined the site of the Project and the adjacent areas, have suitably investigated the nature and location of the Work and have satisfied themselves as to the general and local conditions which will be applicable, including but not limited to: (1) conditions related to site access and to the transportation, disposal, handling and storage of materials; (2) the availability of labor, water, power and roads; (3) normal weather conditions; (4) observable physical conditions at the site and existing site conditions including: size, utility capacities and connection options of external utilities; (5) the surface conditions of the ground and (6) the character and availability of the equipment and facilities which will be needed prior to and during the performance of Work.

CONTRACTOR, including its design professionals, has suitably reviewed proposal documents, environmental documents and any other documentation furnished by CITY in the Contract Documents.

In Phase 1, CONTRACTOR shall submit to CITY design work products at 10%, 25%, and 50% completion for scope compliance review by CITY as stated and delineated in Exhibit B. The 10%, 25%, and 50% design work product submissions shall also include a cost estimate for all Work to be performed in Phases 2A and 2B.

In Phase 1, CONTRACTOR shall submit to CITY design documents that are 60-75% complete when said documents are sufficient for CONTRACTOR to provide to CITY its proposed Phase 2A GMP and Phase 2A Contract Time. The 60-75% design document submission shall include the information required in Section 3.2.7 of the RFP, and shall be delivered to the CITY concurrently with the proposed Phase 2A GMP and all bidding documents required by Article 1(f) of this Contract.

In Phase 2A, CONTRACTOR shall submit to CITY design documents that are 90% complete when said documents are sufficient for CONTRACTOR to confirm to CITY its proposed Phase 2B GMP and Phase 2B Contract Time. The Phase 2A submission shall include the information required in Exhibit N except as waived in writing by the CITY, and shall be delivered to the CITY concurrently with the proposed Phase 2B GMP and all bidding documents required by Article 1(f) of this Contract.

CONTRACTOR agrees that (1) it will manage, coordinate and fully complete the design; (2) CONTRACTOR will cause its design professionals to describe and depict the final design for the Project, as approved by the CITY, in Contract Documents which will include all information required by the building trades to complete the construction (other than such details customarily developed by others during construction) and (3) it will manage and timely construct the Project in consideration for the CITY's payment of the Phase 1 Lump Sum Contract Price and Phase 2A and Phase 2B GMPs.

CONTRACTOR, including its design professionals, has reviewed the milestones identified in the Request for Proposals and agree that the design and construction tasks and milestones are reasonable and feasible, except as modified by CONTRACTOR's Proposed Contract Schedule, approved by CITY. CONTRACTOR also agrees that the time is of the essence for the performance of the Work.

CONTRACTOR agrees that all Contract Documents will be completed, coordinated, and accurate. "Contract Documents" means the Request for Qualifications, Request for Proposals, Contractor's Proposal, this Contract, Front End Contract Documents, including General Conditions and Supplemental Conditions, Exhibits, City of Stockton Standard Specifications, Specifications, List of Drawings, Drawings, Addenda, Notice to Proceed, Change Orders, Notice of Completion, and all other documents identified in this Contract of which together form the Contract between CITY and CONTRACTOR for the Work (the "Contract"). The Contract constitutes the complete agreement between CITY and CONTRACTOR and supersedes any previous agreements or understandings.

The design development documents to be prepared by CONTRACTOR shall include drawings and outline specifications fixing and describing the Project size and character as to site utilization, and other appropriate elements incorporating the civil, structural, geotechnical, architectural, mechanical, environmental, process, instrumentation, and electrical systems. The design development documents set forth in detail the requirements for the construction of the Work, and shall be based on codes, laws, or regulations enacted at the time of their preparation.

CONTRACTOR agrees that all materials, equipment and furnishings incorporated into or used in the construction work will be of good quality, new (unless otherwise required or permitted by the Contract Documents) and free of liens, claims and security interests of third parties. If required by the CITY, CONTRACTOR will furnish satisfactory evidence as to the kind and quality of the materials, equipment and furnishings.

CONTRACTOR agrees that the construction work will be of good quality, free of defects and will conform with the requirements of the Contract Documents. Work not conforming to the requirements of the Contract Documents, including substitutions in design or construction not specifically approved or authorized by the CITY in advance, may be considered defective.

CONTRACTOR agrees to correct any error(s), omission(s), or deficiencies in any documents or deliverables that it prepares or provides at no additional cost to CITY; however, this provision in no way limits the liability of Contractor.

CONTRACTOR shall furnish a surety bond in an amount equal to one hundred percent (100%) of the Phase 2B GMP as security for faithful performance of Phase 2B of this Contract, and shall furnish a separate bond in an amount equal to one hundred percent (100%) of the Phase 2B GMP as security for payment to persons performing labor and furnishing materials in connection with Phase 2B of this Project. Bonds shall be in the form set forth and attached to this Contract.

(l) CONTRACTOR and each of its subcontractors shall comply with Stockton Municipal Code Section 3.68.095 (Local Employment—Public works contractors) (hereinafter “Local Employment Ordinance”), which is incorporated herein by this reference. CONTRACTOR and each of its subcontractors shall complete and maintain all documentation, reports and records required by, and necessary for monitoring their compliance with, the Local Employment Ordinance. The failure of CONTRACTOR or any of its subcontractors to comply with any of the requirements of the Local Employment Ordinance shall be deemed a material breach of the Contract or subcontract.

2. CITY agrees:

(a) To pay CONTRACTOR for the work herein contemplated in the following manner:

For Phase 1, progress payments will be made on or about the first day of each calendar month, in such sum as shall make the aggregate of payment up to such day equal to one hundred percent (100%) of the proportional Phase 1 Lump Sum Contract Price, upon the basis of the progress certificate of the Municipal Utilities Director as to the amount of work done and the proportional amount of the contract price represented therefor; and all of the remaining part of the Phase 1 Lump Sum Contract Price not as aforesaid paid, shall be paid at the expiration of thirty-five (35) days in accordance with General Conditions Section 00700-8.0. Payments shall be made in accordance with the drawdown schedule required by Section 3.2.1 of the RFP.

For Phase 2A, progress payments will be made on a time and materials basis at billing rates identified in, and not to exceed the price shown in, Exhibit O.

For Phase 2B, progress payments will be made on or about the first day of each calendar month, in such sum as shall make the aggregate of payment up to such day equal to ninety-five percent (95%) of the proportional Phase 2B GMP. Payment will be made on a time and materials basis for the Cost of the Work as shown on Exhibit Q. The sum of payments for the Cost of the Work shall not exceed the GMP. The Cost of the Work shall include all of CONTRACTOR’s fee, margins, markups,

overhead and profit or other similar charges. If the Cost of the Work, at final completion of the Project, is less than the GMP, the CITY and CONTRACTOR agree to a Shared Savings as described in Exhibit Q. All of the remaining part of the Phase 2B GMP not as aforesaid paid, shall be paid at the expiration of thirty-five (35) days from the filing of the Notice of Completion of said work of construction.

Pursuant to the Public Contract Code, CONTRACTOR will be permitted, at its request and sole expense, to substitute securities for any monies withheld by the CITY to ensure performance under the contract. Said securities will be deposited either with the CITY or with a state or federally chartered bank as escrow agent. The costs of such escrow shall be paid by the CONTRACTOR. Securities eligible for this substitution are those listed in Section 16430 of the California Government Code or bank or savings and loan certificates of deposit. The CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

CONTRACTOR shall have the obligation of ensuring that such securities deposited are sufficient so as to maintain, in total fair market value, an amount equal to the cash amount of the sums to be withheld under the Contract. If, upon written notice from CITY, or from the appropriate escrow agent, indicating that the fair market value of the securities has dropped below the dollar amount of monies to be withheld by CITY to ensure performance, CONTRACTOR shall, within five (5) days of the date of such notice, post additional securities as necessary to ensure that the total fair market value of all such securities held in escrow is equivalent to the amount of money to be withheld by CITY under the Contract.

3. CHANGE ORDERS:

CITY reserves the right to make such alterations, deviations, additions to or omissions from the plans and specifications, including the right to increase or decrease the quantity of any item or portion of the work, as may be deemed by the Director to be necessary or advisable and to require such extra work as may be determined by the Director to be required for the proper completion of the whole work contemplated.

Any such changes will be set forth in a contract change order which will specify, in addition to the work done in connection with the change made, adjustment of contract time, if any, and the basis of compensation for such work. A contract change order will not become effective until approved by the authorized CITY official executing this contract and/or the City Council.

Cumulative change orders which exceed the charter limit [\$75,000 as of March 1, 2015] and is adjusted annually on July 1st of each year) plus ten percent of the initial contract price over one hundred thousand dollars (\$100,000) require CITY Council approval. Change orders not meeting the above criteria require approval by the CITY official executing this contract. the dollar amounts of change orders approved by specific city council actions, plus the dollar amounts of any change orders which predate such specific CITY Council action, shall not be counted in computing the authority limits set

forth above for CITY officials to approve change orders hereunder. In emergency situations, the authorized CITY official may issue a change order beyond the authority limits described above in order to:

- (i) Prevent interruption of the work which would result in a substantial increase in the costs to, or liability of, CITY; or
- (ii) Protect the work, equipment, materials to be used in the work, human safety, or the environment at or near the work from substantial and immediate danger or injury; or
- (iii) Protect, where damage or injury has occurred, the work, equipment or materials to be used in the work, human safety, or the environment at or near the site of the work from further or additional damage or injury or deterioration.

The authorized CITY official shall have the authority to issue change orders in such sums as is reasonably necessary for such emergency purposes. After issuing a change order in an emergency situation described above, the authorized CITY official shall report such action and the reasons therefor to the City Council in writing not later than its next regularly scheduled meeting or as soon thereafter as is practicable.

Upon receipt of an approved contract change order, CONTRACTOR shall proceed with the ordered work. If ordered in writing by the Engineer and/or City Representative, CONTRACTOR shall proceed with the work so ordered prior to actual receipt of an approved contract change order therefor. In such cases, the Engineer will, as soon as practicable, issue an approved contract change order for such work and the provisions in General Conditions Section 00700-7.1.1, "Procedure and Protest," (Specifications) shall be fully applicable to such subsequently issued contract change order.

When the compensation for an item of work is subject to adjustment under the provisions of General Conditions Section 00700-7.1, "Changes," (Specifications) CONTRACTOR shall, upon request, promptly furnish the Engineer with adequate detailed cost data for such item of work. 4.

AUDITS:

- (a) CITY reserves the right to periodically audit all charges made by CONTRACTOR to CITY for services under the contract. Upon request, CONTRACTOR agrees to furnish CITY, or a designated representative, with necessary information and assistance.
- (b) CONTRACTOR agrees that CITY or its delegate will have the right to review, obtain and copy all records pertaining to performance of the contract. CONTRACTOR agrees to provide CITY or its delegate with any relevant information requested and shall permit CITY or its delegate access to its premises, upon reasonable notice, during normal business hours for the purpose of interviewing employees and inspecting and copying such books, records, accounts, and other material that may be relevant to a matter under investigation for the purpose of determining compliance with this requirement. CONTRACTOR further agrees to maintain such records for a period of three (3) years after final payment under the contract.

5. OPTION

(a) During completion of the Phase 2A Work, the CITY may exercise its option for performance of the Phase 2B Work if CITY and CONTRACTOR agree to a Phase 2B GMP and Phase 2B Contract Time, and by providing a written Notice to Proceed to the CONTRACTOR for performance under Phase 2B. The Option for Phase 2B may be exercised at any time during the execution of Phase 2A Work, but not later than ninety (90) days after the expiration of the Phase 2A Contract Time. If CONTRACTOR has complied with all other terms of the Contract and the CITY fails to exercise its Option for Phase 2B by such calculated date, it shall be deemed that the CITY has decided not to exercise the OPTION.

(b) If CITY decides not to exercise the OPTION under this Article, and CITY notifies CONTRACTOR that CONTRACTOR is not required to perform construction services for Phase 2B, it is anticipated that the CITY will take the “off-ramp” as identified in Exhibit J, and CONTRACTOR will perform, at CITY’s discretion and option, and after a Notice to Proceed is issued pursuant to Article 1(g) hereinabove, two separate scopes of work/services:

(i) Upon receipt of the Notice to Proceed identified above in Article 1(g), CONTRACTOR will complete the design of the Project by preparing unified sets of plans and specifications for use by the CITY to solicit competitive bids for construction of the Facilities in accordance with the scope of work set forth in Exhibit J, and within the Final Design Documents Contract Time (as identified above in Article 1(g)). The performance of the final design services under this paragraph shall be performed for the Lump Sum Contract price as set forth in Exhibit K.

(ii) Upon receipt of a Notice to Proceed from the CITY at a time after CONTRACTOR has completed the services required under Article 5(b)(i) above, CONTRACTOR, pursuant to the terms of the Contract Documents, shall remain the Engineer of Record, and will provide engineering services during construction as set forth in Exhibit L, for the Lump Sum Contract price as set forth in Exhibit M.

(c) The CITY’s “OPTION” rights under this Article 5 are independent of the “Termination for Convenience” rights set forth in General Conditions Section 00700-7.2.5. As such, if the CITY opts to not proceed with Phase 2B after the completion of Phases 1 and 2A, CONTRACTOR’s right of recovery is limited to the sum of the Phase 1 Lump Sum Contract Price and Phase 2A GMP.

(d) The CITY retains the right to terminate this Contract for convenience at any time in accordance with General Conditions Section 00700-6.7.

6. Limitation of Remedies and Allocation of Risks. (a) The Contractor and City waive claims against each other for consequential damages arising out of or relating to this Contract. This waiver shall survive completion of or termination of the Contract.

The waiver of consequential damages set forth above specifically does not include any and all damages recoverable as liquidated damages as set forth in this contract; all damages arising from claims

made by third parties, including, but not limited to, the parties' obligations under the indemnity obligations of this contract; fines or penalties, including those relating to environmental issues; all costs or damages to complete the work contemplated by this contract or to repair or correct defective work; damages incurred to require complete and full compliance with the terms of this contract; and all damages required to ensure that the Work meets the performance requirements of the contract. The waiver of consequential damages will not preclude a party from asserting such damages as an offset to any claim for damages made by the other party, provided that the City may not offset retainage owed to Contractor.

In recognition of the relative risks and benefits of the Project to both City and Contractor, City agrees, to the fullest extent permitted by law and notwithstanding any other provision in this Agreement, that any liability created by or arising out of this Agreement on the part of Contractor to City and any person or entity claiming by, through or under City, for any and all claims, liabilities, losses, costs, damages of any nature whatsoever, or claims expenses from any cause or causes (including without limitation any attorneys' fees under this Agreement), shall not exceed 50% of the Contract Sum (Sum of Phases 1, 2A and 2B), inclusive of the limitation on liquidated damages above. This limitation of liability shall not reduce the availability of, or the ability of the City or any other party to pursue and recover amounts from, insurance required to be provided by Contractor, nor shall this limitation of liability limit be applicable to recovery under the performance and payment bonds provided for the Project; to the extent City has a right to recover under such performance and/or payment bonds, Contractor and the sureties under the bonds shall remain liable in the full amount of such bonds without regard to or reduction by the limitation of liability set forth herein.

7. It is expressly understood and agreed by and between the parties hereto that a waiver of any of the conditions of this contract shall not be considered a waiver of any of the other conditions thereof.

8. It is further understood and agreed by and between the parties hereto that time is of the essence of this contract in all respects.

IN WITNESS WHEREOF, the parties hereto have hereunto affixed their hands and seals the day and year first above written.

ATTEST:

CITY OF STOCKTON, a municipal corporation

By _____

CITY MANAGER
"CITY"

BY _____
CITY CLERK

AECOM Infrastructure and WML, a Joint Venture

APPROVED AS TO FORM:

By _____
Pete Holland, Region Executive
"CONTRACTOR"

Dated: _____

Joint Venture _____

John Luebberke
CITY ATTORNEY

81-3291439
Tax Identification No. _____

By _____
CITY ATTORNEY

1006296
Contractors License No. _____

DIR Registration No.

BOND FOR FAITHFUL PERFORMANCE

KNOW ALL MEN BY THESE PRESENT:

That we, _____, as Principal
and _____, a corporation, organized and existing under the laws of the State
of _____ and duly authorized to transact business under the laws of the State of
California, as Surety, are held and firmly bound unto the City of Stockton, a municipal corporation, duly
created and existing under and by virtue of the laws of the State of California, as obligee, in the just and
full sum of _____, in lawful money of the
United States of America (being 100% of the contract price) for the payment whereof well and truly to be
made to the said CITY, the said Principal and Surety bind themselves, their successors and assigns,
jointly and severally, firmly by these presents.

The condition of the foregoing obligation is such that the above bounded Principal has
simultaneously entered into a contract with the CITY, to do and perform the following work, to wit:

_____. (Project No. _____) .

NOW THEREFORE, if the above bounded Principal, CONTRACTOR, Company or
Corporation or its subcontractor, shall well and truly perform the work contracted to be done under said
contract, then this obligation to be null and void; otherwise to remain in full force and effect.

No prepayment or delay in payment and no change, extension, addition or alteration of
any provision of said contract, or in said plans or specifications agreed to between the said
CONTRACTOR and the said CITY, and no forbearance on the part of the said CITY shall operate to

Construction Contract
00500-19

relieve any Surety or Sureties from liability on this bond, and consent by said Surety is hereby given, and the said Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

SIGNED AND SEALED on _____.

a

APPROVED AS TO SURETY:

By _____
"PRINCIPAL"

DIRECTOR OF FINANCE

SURETY

APPROVED AS TO FORM:

Dated: _____

John Luebberke
CITY ATTORNEY

By _____
ATTORNEY-IN-FACT

By _____
CITY ATTORNEY

BOND FOR LABOR AND MATERIAL

KNOW ALL MEN BY THESE PRESENT:

That we, _____, as Principal,
and _____, a corporation, organized and existing under the laws of
the State of _____ and duly authorized to transact business under the
laws of the State of California, as Surety, are held and firmly bound unto the City of Stockton, a
municipal corporation, duly created and existing under and by virtue of the laws of the State of
California, and unto any and all material suppliers, persons, companies, or corporations furnishing
materials, provisions, provender or other supplies used in, upon, for or about the performance of the work
contemplated to be executed or performed under the contract hereinafter mentioned, and all persons,
companies, or corporations renting or hiring teams, or implements of machinery, for or contributing to
said work and all persons who perform work or labor upon the same, and all persons who supply both
work and materials, and whose claims have not been paid by the contractor, company or corporation in
the just and full sum of _____, in lawful money of the United
States of America (being 100% of the contract price) for the payment whereof well and truly to be made
to said City of Stockton and to said persons jointly and severally, the said principal and Surety bind
themselves, their successors and assigns, jointly and severally, firmly by these presents.

The condition of the foregoing obligations is such that the above bounden Principal has
simultaneously entered into a contract of even date herewith, with the CITY, to do and perform the
following work, to-wit: _____ (Project No _____) .

NOW THEREFORE, if the above bounden Principal, CONTRACTOR, Company or
Corporation or its subcontractor, fail to pay for all materials, provisions, provender, or other supplies, or
teams, used in, upon, for or about the performance of the work contracted to be done, or for any work or
labor done thereon of any kind, the Surety on this bond will pay the same, in an amount not exceeding
the sum specified in this bond, provided that any and all claims hereunder shall be filed and proceedings
had in connection therewith as required by the provisions of Division 3, Part 4, Title 15, Chapter 5,
Article 1 of the Civil Code of California, provided that in case suit is brought upon this bond, a
reasonable attorney's fee shall be awarded by the Court to the prevailing party in said suit; said attorney's
fee to be Lump Sum as costs in said suit, and to be included in the judgment therein rendered.

No prepayment or delay in payment and no change, extension, addition or alteration of
any provision of said contract or in said plans or specifications agreed to between the said
CONTRACTOR and the said CITY and no forbearance on the part of the said CITY shall operate to

Construction Contract
00500-21

relieve any surety or sureties from liability on this bond, and consent to make such alterations without further notice to or consent by any such surety is hereby given, and the said sureties hereby waive the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

SIGNED AND SEALED on _____.

a

APPROVED AS TO SURETY:

By _____

"PRINCIPAL"

DIRECTOR OF ADMINISTRATIVE
SERVICES/CFO

SURETY

APPROVED AS TO FORM:

Dated _____

By _____

ATTORNEY-IN-FACT

John Luebberke
CITY ATTORNEY

By _____

CITY ATTORNEY

Exhibit A**Key Personnel and Subcontractors**

City of Stockton Municipal Utilities Department Progressive Design–Build Services
Regional Wastewater Control Facilities Project
January 22, 2019

The following is a list of Key Personnel who will be used in design, construction and operation of the City of Stockton's Regional Wastewater Control Facility Modifications Project:

- Denny Dyroff- Project Manager
- Brian Harrington- Process Design Manager
- Gabriel Perigault- Design Manager
- Joe Lawrence and Vince Guillama- Construction Managers
- Scott McElwain- Safety Manager
- TBD – Quality Control Manager

The following is a list of Approved Subcontractors who will be used in design, construction and operation of the City of Stockton's Regional Wastewater Control Facility Modifications Project:

- HydroScience - Design Support
- Kleinfelder - Geotechnical and Design Support
- Tesco - SCADA Integration
- Collins Electrical - Electrical
- Siegfried Engineering - Surveying

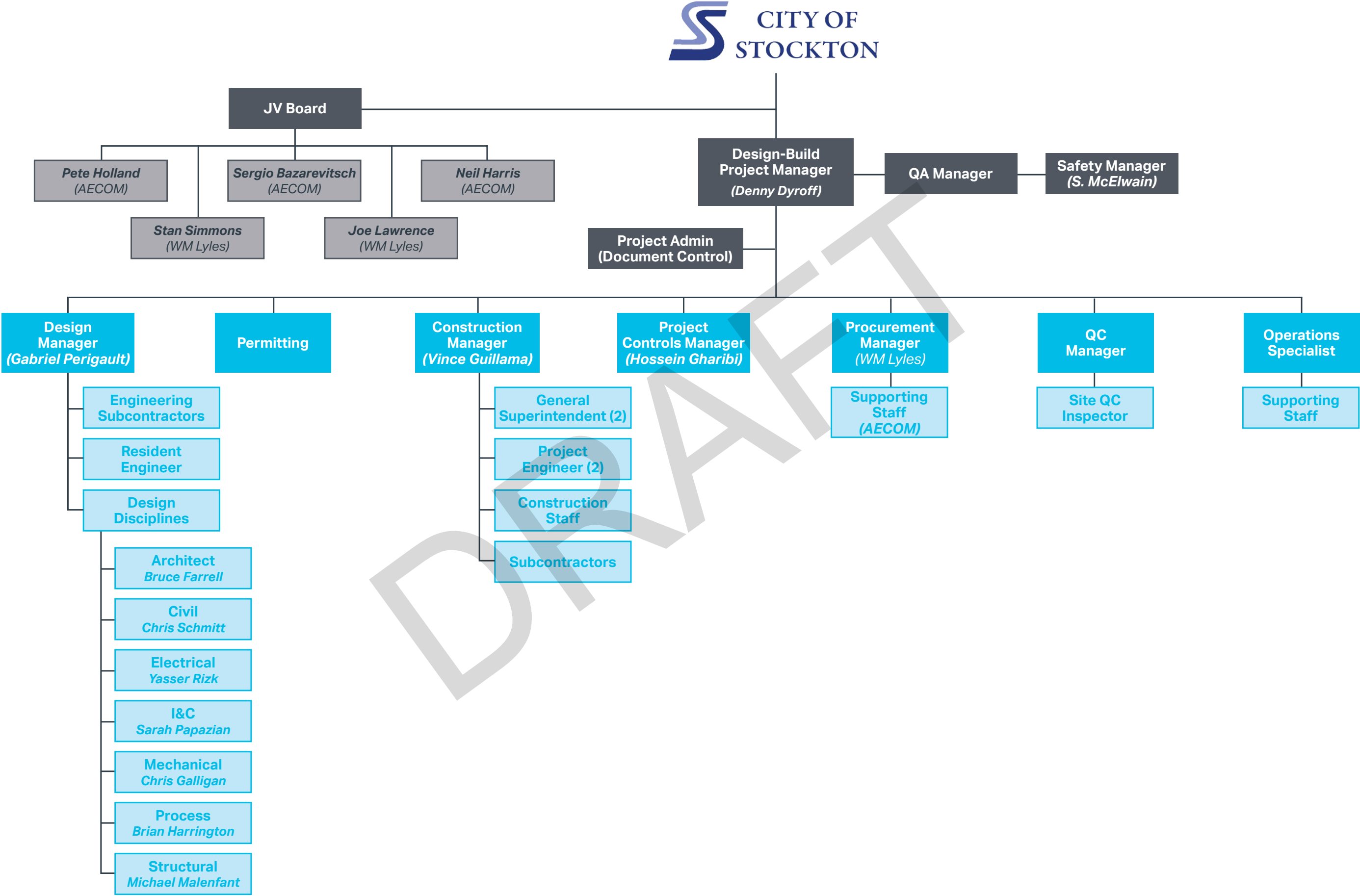


Exhibit B
Performance Requirements
City of Stockton Municipal Utilities Department
Regional Wastewater Control Facility (RWCF) Modifications Project
January 28, 2019

1.0 PURPOSE

This Exhibit B sets forth the Minimum Performance Requirements for the Facilities included in the scope of this project.

2.0 MINIMUM PERFORMANCE REQUIREMENTS

2.1 Wastewater Treatment Requirements-General

The Contractor shall design and construct the facilities included in the project to ensure compliance with applicable law pursuant to Article 4, Chapter 4, Division 7 of the California Water Code (commencing with Section 13260) and Section 402 of the Clean Water Act and implementing regulations adopted by the United States Environmental Protection Agency (EPA) and of appropriate and necessary sections of the Water Code.

All analytical methods used to demonstrate compliance shall conform to Regional Water Quality Control Board (RWQCB)-approved analytical methods and/or those methods required in the current NPDES Permit. In the event that a particular water quality parameter does not have a RWQCB-approved analytical method, it is acceptable to use analytical methods that are currently approved by the EPA and/or contained in the latest edition of Standard Methods for the Examination of Water and Wastewater.

2.2 Regulatory Requirements

The Contractor shall design and construct the facility to ensure compliance with all applicable requirements of NPDES Permit No. CA0079138 (Order R5-2014-0070-03), issued by the Central Valley RWQCB (current NPDES Permit).

Wastewater permits, such as the current NPDES Permit, address four core subject areas related to the process of treating and disposing wastewater:

- *Effluent limitations* are the water quantity and quality standards that the treated wastewater (final effluent) must meet as the final effluent is discharged to waters of the state, in this case, the San Joaquin River.
- *Surface water limitations* control the potential impact of the final effluent on the waters of the state to which the effluent is discharged.
- *Groundwater limitations* control the potential impact of the entire wastewater treatment and disposal process on underlying groundwater quality.
- *Sludge disposal specifications* control disposal of the sludge generated during the wastewater treatment process.

Effluent limitations and discharge specifications, receiving water limitations, and regulatory provisions associated with these four core areas are detailed in the current order.

3.0 REFERENCES

Further information on regulatory requirements can be found in Section 2.0 of the Final Basis of Design Report. Performance Requirements and testing confirmation approach are detailed in Exhibit E under Appendix C - Acceptance Testing Plan Outline.

DRAFT

Exhibit C
Phase 1 Scope of Services

City of Stockton Municipal Utilities Department
Progressive Design–Build Services
Regional Wastewater Control Facilities Project

July 25, 2016

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Appendix A - Summary of Major Facilities and Construction Phasing

Introduction

As requested by the City of Stockton (City), AECOM/W. M. LYLES JOINT VENTURE (AECOM/WML) has developed a scope of services and preliminary schedule for Phase 1 of the progressive design-build services for the Regional Wastewater Control Facilities Project (Project).

Background

The City owns and operates the Regional Wastewater Control Facility (RWCF), which provides sewerage service for the City of Stockton, Port of Stockton, and surrounding unincorporated areas of San Joaquin County. The RWCF is located at 2500 Navy Drive in Stockton, with facilities situated on both the eastern and western banks of the San Joaquin River.

The existing RWCF includes the following four treatment areas: Main Plant, facultative ponds, engineered wetlands, and the Tertiary Plant. The Main Plant includes all the treatment facilities on the eastern bank of the river. The Tertiary Plant includes all the treatment facilities on the western bank of the river. The plants are connected by a bridge over the River.

The Main Plant receives wastewater flows from the surrounding communities and provides screening, grit removal, raw sewage pumping, primary sedimentation with chemical addition, secondary treatment with biotowers, secondary clarification, and secondary effluent pumping.

Additional secondary treatment and storage can be provided using the facultative ponds. Secondary and tertiary treatment is also available in the adjacent engineered wetlands. The use of the ponds and wetlands for treatment or diversion past the ponds and wetlands are optional flow paths dependent on a variety of operational factors. Effluent from the ponds, wetlands, or diversion structures (as applicable) is then routed to the Tertiary Plant.

The Tertiary Plant provides ammonia removal using nitrifying biotowers, dissolved air flotation with chemical addition, dual media tertiary filtration, disinfection by chlorination using a disinfection channel (CCC), and dechlorination prior to discharge to the San Joaquin River via a siphon to a submerged open pipe outfall.

The Main Plant also provides solids handling for the solids generated by the primary and secondary sedimentation processes. Solids are either routed to gravity thickeners, gravity belt thickeners or pumped to the anaerobic digesters directly. After anaerobic digestion, sludge is pumped to a holding tank. Digested solids are removed from the lagoons by a dredge or pumped directly to holding tanks where they are further conditioned and dewatered using belt filter presses. Dewatered solids are hauled off-site by a private contractor and routinely recycled on agricultural lands as a source of nutrients and soil amendment. In an emergency, solids can be used as daily cover for solid waste at the landfill.

Many of the facilities of the existing RWCF include dated technologies and have aging equipment and infrastructure, which will not be able to accommodate future treatment demands and meet regulatory requirements. Because of this, the City has embarked in a program to significantly upgrade the RWCF. These upgrades will be implemented to specifically address the following issues:

1. More Stringent Regulatory Limits. The RWCF must meet new nitrate and nitrite nitrogen discharge limits by June 1, 2024. A biological nitrogen removal (BNR) process needs to be incorporated into the treatment train.
2. Need for Increased Capacity. The CIEMP forecasts a 60 percent increase in influent flow and loadings by 2035.
3. Aging Infrastructure/Outdated Technologies. Most of the unit processes in the plant range in age from 40 to 70 years, and in some cases are well past their useful operational life or rely on outdated technologies. Rehabilitation or replacement is necessary to ensure an efficient, reliable, and safe operation.

4. Need for Better Control Systems. Control rooms are scattered around the facility and SCADA monitoring is incomplete, making operations less efficient. A centralized control/operations center with a comprehensive Supervisory Controls and Data Acquisition (SCADA) system is needed to make plant operations more efficient.
5. Personnel Facilities. The treatment plant has grown in size, complexity and age over the years and this has resulted in increases in the City operations, maintenance and engineering staff. However, personnel facilities including laboratory space, offices, locker rooms, and the like, have not kept pace. Modern facilities are needed to accommodate these functions.

Project Objective

The goal of the RWCF Progressive Design-Build Project is to plan, design and construct wastewater treatment plant facilities that are able to meet current regulatory treatment objectives and balance future potential regulatory requirements for most conditions in a cost-effective manner while extending the life of existing assets within the budget available of \$150 to \$170 million.

AECOM/WML will generate cost-effective, creative treatment solutions and work collaboratively with the City in identifying the facility improvements that meet the goal of the Project.

Project Description

The type and extent of the improvements included in the Project will be further analyzed and refined in close coordination with the City during Phase 1. However, for the purposes of this scope and in accordance with the AECOM/WML proposal for this Project, it is envisioned that the Project may include the following improvements. Further definition of the proposed improvement and implementation timeline is provided in Appendix A – Summary of Major Facilities and Construction Phasing.

1. Influent Pump Station and Headworks

A new trench style self-cleaning influent pumping station with new fine screening and grit removal located above ground is planned.

This involves demolishing the existing safety and training building, and incorporating those functions into an expanded administration building to create space for a new 23 feet by 55 feet long influent pump station. The pumping station will feature three new vertical turbine solids handling pumps, each with 27.5 mgd capacity for a total firm capacity of 55 mgd. The pumps would be set at grade and will lift influent raw wastewater into the new above grade screening and grit removal facility.

The existing influent pump station will be used for wet weather peak flows. Existing screening and grit removal will be retained for wet weather operation and to protect the existing influent pumps. During the workshop phase, we will evaluate converting one or more of the existing screens to serve as a coarse screening step to protect the new influent pumps. Two or more of the existing 5/8th screens would be retained for wet weather operation when the existing influent pump station would come back into service to handle influent flow peaks.

2. Primary Treatment

The existing primary clarification system of the RWCF includes six rectangular clarifiers (PC 1-4 and 7-8) and two squircular clarifiers (PC 5 and 6). PC 1-4 were built in the '40s, PC 5-6 in the '50s, and PC 7 and 8 in the early '90s.

PC 5 and 6 are currently not operational and in need of significant structural and mechanical rehabilitation. The 2011 CIEMP report recommended refurbishing these clarifiers to gain additional capacity for future flow increases.

The sludge collection systems of PC 1-4 and 7-8 are old and corroded and their concrete structures have cracks and chips, as well as evidence of concrete efflorescence. Plant staff have noted a number of operational and performance issues with these clarifiers including (1) uneven flow distribution; (2) heavy wear and frequent breakdown of the chain and flight sludge removal mechanisms (all the rectangular units feature an unusual configuration of sludge removal at the effluent end and not the influent end of the clarifier); and (3) the need to over pump primary sludge because of inadequate solids handling capacity in the primary sludge pumps.

In summary, improvement to the primaries is another area that needs attention from the City and the design-build project team.

3. Secondary Treatment

To reduce energy usage and meet the new nitrogen standards in a single unit process, a new BNR activated sludge process is proposed. This would include building new aeration tanks with sufficient aeration capacity in a Modified Ludzack Ettinger (MLE) configuration, adding new secondary clarifiers, high efficiency turbo blowers, and return sludge pumping stations. This MLE process will replace the current four stages of biological treatment (biotowers, oxidation ponds, wetlands, and nitrifying biotowers).

4. Secondary Effluent Pumping

With the biotowers out of service, the existing Biotower pumping station will be repurposed to serve as a secondary effluent pumping station.

5. Peak Flow Equalization

Peak flow equalization will likely be needed as the incoming peak hourly flow may exceed the design hydraulic capacity of the tertiary treatment system or possibly even the hydraulic capacity of the new secondary treatment system. One option for short-term peak flow storage is to convert the existing secondary clarifiers into equalization tanks. Approximately 5 MG of storage could be provided. Alternatively, a one-way discharge into the ponds could be used. This latter approach could free up the existing secondary clarifiers and allow them to be repurposed for dewatering filtrate equalization. These options will be evaluated during the workshop/process evaluation phase of design development.

6. Tertiary Filtration

The base approach for the project will be to continue to use the existing deep bed filters. During the workshop phase, we will evaluate the cost differences between renovating the existing filters and substituting new disk filters. Capital costs are likely to be lower with reuse of the existing but higher operating costs will be incurred because the disk filters would be all new, they can be placed at the best elevation for the hydraulic profile in conjunction with a modified disinfection process. We will also evaluate moving all of tertiary across the river to just south of the main plant area on the new property the City recently purchased.

7. Disinfection

The base approach for disinfection will also be to reuse the existing chlorination/dechlorination facilities. During the workshop phase we will evaluate abandoning the existing chlorination and dechlorination facilities and substituting a reduced footprint and energy efficient UV system. We propose to evaluate the options in two steps: First, we will compare the performance of chlorination with free chlorine versus performance of chloramination in terms of its ability to meet DBP criteria. Secondly, once this decision is made we will evaluate the cost effectiveness of the selected chlorine disinfection process v. UV disinfection. A second chlorine based disinfection alternative based on the recently revised Title 22 requirements for BNR facilities will also be evaluated.

8. Emergency Flow Diversions

Given the existing assets of nearly 500 acres of ponds and the 48-inch bypass piping in the Main Plant area, there is potential for adding emergency flow diversion at multiple places across the treatment process. Diversion

of primary effluent and secondary effluent could be provided up to the hydraulic capacity of bypass piping effluent pumping station.

The newer of the existing secondary effluent pump stations could be re-purposed for bypass pumping across the river to the ponds using existing piping. Additional gravity diversions to the ponds could be provided after tertiary filtration and UV disinfection using a combination of existing and new piping.

9. New Tertiary Treatment force main

Approximately 3250 LF of new 60-inch force main will be needed to transfer secondary effluent from the river crossing to the existing deep bed filters. The proposed route will follow existing pipeline alignments to best avoid any conflicts with existing piping and endangered species/elderberry trees. Should the City choose the disk filter option, then depending on the location of the new filters, the length or even the need for the new pipeline will be adjusted.

10. Wetland Flow Diversion/Pond Water Management

Provisions to divert approximately 2 mgd of secondary effluent from the new force main to tertiary treatment are included. This flow diversion would discharge into the existing supply canal to the wetlands to maintain a healthy ecosystem for the biota that uses the wetlands as a habitat. We will also evaluate strategies for wetlands water management, including developing an annual water balance and estimating the amount of water needed to keep the ponds healthy.

During the workshop phase, we will also evaluate strategies for managing flow to and from the ponds, including the potential for storing water for discharge during summer months.

11. Solids Handling Improvements

Thickening of primary and new BNR waste activated sludge will be performed separately to avoid increased biological activity from combination of a significant carbon source (primary sludge) and active biology (WAS). Gravity thickeners will be dedicated to handling primary sludge and gravity belt thickeners dedicated to handling WAS. The thickened sludge from both thickening systems will be pumped to the anaerobic digesters.

One of the older digesters will be converted into a digested sludge storage tank to serve as a buffer tank to feed the new screw presses (based on information the City shared during a recent site visit, this modification may have already been implemented).

The existing sludge lagoons will be backfilled to create more space for plant operations as construction of new aeration basins and clarifiers will generate a source of fill.

During the workshop phase, we will evaluate the addition of screw presses and the timing of this addition (e.g. current project or future). Scenarios to be evaluated would include adding in the current project (1) screw presses with sufficient capacity for average sludge volumes (for higher sludge loadings, the existing belt filter presses and sludge cake pumps will be brought back into active service); (2) providing all new screw presses in the current project and abandoning the existing (and recently renovated) belt filter presses and sludge cake pumps; and (3) Deferring new screw presses to a future expansion.

The screw presses would be installed in the upper level of a new roofed but open sided structure. The presses would deposit dewatered cake on a new conveyor system that will be used to load sludge onto a drive through truck loading area. New pipelines would be needed to bring digested sludge over from the existing dewatering building area and the sludge cake pipeline would need to be extended from the sludge loading area to the new dewatering building.

A filtrate equalization tank will be included as part of the new dewatering building. This tank will store the high ammonia filtrate from dewatering so that it can be evenly returned to the aeration tanks over a 24-hour basis.

12. Further Improvements to Operational Efficiency

The following improvements are also included in the Project:

- Expanded laboratory space with provisions for outside sample delivery.
- A new central control room for all facility operations.
- A new locker and shower facilities for RWCF staff.
- A new office space for engineering, operations, and the City management.
- Relocation of laboratory functions into a new laboratory space, which will include space for the environmental group.
- Remodeling and code updates to all control rooms, lockers and shower areas.
- Enhancements to the existing administration building to include additional space for engineering, City management, and site safety operations.
- Enlarging the Operations support offices into the area now used by the environmental group.

13. Project Phasing

AECOM/WM Lyles has developed a phased approach for the City's consideration in implementing the project under varying budget ceilings:

- **Project.** This approach is targeted around the City's \$150 MM project budget with a proper roadmap for the future but with substantial enhancement in treatment capacity.
- **Future (2035) Project.** Additional facilities would be added as required by increased flows and loads to achieve full capacity for projected 2035 conditions.

Further details on the proposed phasing of facilities can be found in Appendix A.

Progressive Design Build Approach Implementation

In accordance with the RFP, AECOM/WML proposes to implement the project on a progressive design-build basis. This approach involves bringing design and construction resources together in an integrated team to manage the project in a competitive manner but with a single-source responsibility and accountability. This approach is broken down into two distinct phases:

Phase 1 Services – Planning, Design Development, Permitting and Preparation of the Design Build Price.

This phase includes all the planning, engineering, and permitting to prepare a Basis of Design Report (BDR) and sufficient plans, specifications and other supporting documents to develop a Design-Build Price (e.g. Guaranteed Maximum Price (GMP) or Lump Sum Price), and schedule for Phase 2.

Phase 2 Services– Project Execution. Upon agreement on the design-build price for the project, negotiations, preparation of appropriate agreements, approval by City Council, and the release of required approvals, AECOM/WML will proceed with Phase 2, in which final design details will be completed, and equipment and material procurement, construction, engineering design support during construction, construction management, start-up, and acceptance testing will be carried out while allowing for City's input at every stage.

Phase 1 – Scope of Work

AECOM/WML will provide Phase 1 engineering services including the preparation of a Basis of Design Report (BDR) and sufficient plans, specifications and other supporting documents to develop the Phase 2 Proposal, including a DESIGN-BUILD PRICE for the construction of the Project.

The scope of work for Phase 1 has been organized into seven interrelated tasks and two optional tasks as follows:

- Task 1- Project Management
- Task 2- Initial Studies
- Task 3- Design Workshops
- Task 4 - 25 percent Design
- Task 5 - 50 percent Design
- Task 6 - Permitting
- Task 7 - Development and Phase 2 proposal
- Task 8 – First Phase 1 Off-Ramp (Optional)
- Task 9 – Second Phase 1 Off-Ramp (Optional)

A detailed description of these tasks is provided in the following subsections.

Task 1 – Project Management

Objective: The overall objective of this task is to ensure on-time and on-budget project progression according to the scope, fluid and coordinated communication with City staff, adequate project controls and quality of all deliverables.

AECOM/WML Activities: See sub tasks as outlined below:

Deliverables: See sub tasks as outlined below:

Key Understanding: AECOM/WML client liaison, Brian Adams, project manager, Scott Thibault, and design manager Gabriel Perigault, will be responsible to Mr. Robert Granberg (or his designee), project manager for the City of Stockton Municipal Utilities Department.

Meetings/Travel: In general the AECOM/WML DB Project Manager and Design Manager will attend weekly progress review meetings in person or by video conference. Others to attend as needed. One three-hour training workshop will be held at the MUD offices on the DMS system (see sub task 1.8). Two AECOM/WML team members will attend to facilitate the training workshop.

Information and Services Provided by Others: City to provide timely feedback on all deliverables including PM plan, meeting agenda and meeting minutes, updated schedules, progress reports, and risk register updates. City to coordinate information requests from third parties including its environmental consultants, stakeholder groups, and City council.

Sub Task 1.1 – Schedule of Work Products

AECOM/WML Activities: Prepare a listing and schedule of work products requiring City review within 30 calendar days of Phase 1 Notice to Proceed. Include a minimum two-week review period for each submittal, and draft and final submission dates.

Deliverables: Word or Excel versions of draft Schedule of Work Products for review and comment by City staff, and a PDF of final Schedule of Work.

Sub Task 1.2 – Project Management Plan

AECOM/WML Activities: Prepare a detailed Project Management Plan within 30 calendar days of Phase 1 Notice to Proceed. At a minimum, this document shall contain the Phase 1 Scope of Services, project team organization, project communications protocol, directory of addresses and telephone numbers for project team

members, budget control plan, QA/QC program, critical path method (CPM) schedule for Phase 1 activities, and document control procedures.

Deliverables: Five hard copies and Word or Excel electronic copy of the draft Project Management Plan for review and comment by City staff, and one unbound original set, four bound copies, and PDF of the final Project Management Plan.

Sub Task 1.3 – Progress Review Meetings

AECOM/WML Activities: Schedule and conduct weekly progress review meetings with City and City's representatives at MUD offices or by video conference calls with equipment provided and at the MUD Safety Training Room by AECOM/WML. Generate and distribute draft meeting minutes within five business days of each meeting for review by attendees, and final minutes that incorporate review comments. Distribute meeting agendas at least two business days prior to each meeting date. Other documents requiring City review prior to the meeting will be submitted at least two weeks in advance.

Deliverables: Install video conference equipment at the MUD Safety Training Room. Meeting agendas and draft and final meeting minutes.

Sub Task 1.4 – Schedule Updates

AECOM/WML Activities: Update Phase 1 schedule at least monthly, comparing actual progress to the originally proposed schedule and identifying any necessary corrective measures.

Deliverables: PDF of updated schedules.

Sub Task 1.5 – Monthly Payment Requests and Progress Reports

AECOM/WML Activities: Prepare monthly invoices in accordance with actual progress and drawdown schedule and a monthly progress report to accompany each invoice for the previous month's work. Progress reports will review major work activities and budget and schedule status by task, summarizing work hours by task and job title and person assigned for the invoice period, and document progress made during the past month, accomplishments, and a look-ahead to the next month's progress goals.

Deliverables: PDF of monthly invoices and monthly progress reports.

Sub Task 1.6 – QA/QC Program

AECOM/WML Activities: Institute and maintain a QA/QC program for Phase 1 engineering services. To ensure objectivity, senior members of the Contractor's project team who are not directly involved in the project will perform QA/QC for each work product prior to submission to the City.

Deliverables: QA/QC program description included in Project Management Plan (Sub Task 1B). QA/QC review comments and QA/QC documentation available upon request.

Sub Task 1.7 – Coordination

AECOM/WML Activities: Coordinate with permitting agencies (except for the Regional Board and Air Board) and other consultants as necessary. Provide meetings minutes to City within five business days of each meeting.

Deliverables: Draft and final meeting minutes.

Sub Task 1.8 – Document Management System (DMS)

AECOM/WML Activities: In addition to maintaining an internal filing system for all project-related documents, launch and maintain an internet-based electronic DMS using a SharePoint platform to provide efficient and

complete uploading and retrieval of project-related documents. Pertinent documents uploaded into the DMS will include letters, memoranda, reports, meeting handouts and minutes, presentations, calculations, drawings, specifications, telephone conversation logs, invoices and other appropriate written or graphical documents related to the project. Provide links and search functions indicating where the documents are located within the DMS. Provide training for six City personnel that will have access to the DMS.

Deliverables: Internet based DMS. A three-hour training workshop on DMS for up to six City staff.

Sub Task 1.9 – Risk Management

AECOM/WML Activities: AECOM/WML will develop and maintain a risk log. The risk log is the key document used in managing risk. The log records risks identified during proposal and work plan development; workshops, technical reviews, and monthly project meetings; and through other events that occur during the project. Initially the log will be populated with generic risks and those captured through past experience on similar projects. Each identified event is assigned a score based on one of three probability ratings and one of five impact (cost or schedule) severity ratings. This allows a semi-quantitative approach for prioritizing the various risks and to calculate and assign an allowance for the important risks.

Risk workshops will be used to build consensus among stakeholders and as a means to bring the Project together to identify and evaluate potential risks. In addition to the internal risk workshop held during the proposal phase, AECOM/WML will hold two additional one-day risk workshops with the City.

The first will be held at the onset of design and will focus on design and procurement risks, especially those areas indicated in the proposal analysis. Another risk workshop will be held during the development of the design-build price.

Deliverables: Develop and maintain risk log. For each workshop, a workshop agenda issued at least three days before the workshop. A summary of workshop findings issued within 15 days after the meeting.

Sub Task 1.10 – Decision Log

AECOM/WML Activities: Provide an updated decision log at least monthly, to both document key decisions that have been made and outstanding decisions that have yet to be made.

Deliverables: Excel spreadsheet of updated decision log.

Task 2 – Initial Studies

Sub Task 2.1 – Issue Baseline 10 Percent Design Package

Objective: Establish a “Baseline Project” to initiate the dialogue on the different project elements that will be subject to further analyses during the design workshops. The baseline project scope will generally be the scope of work as described in the AECOM/WML proposal and as modified by the project description presented earlier in this document.

AECOM/WML Activities: AECOM/WML will issue a 10% design package with a Baseline Project for the City’s review and comment. The baseline project will be based on the project elements proposed in the July 2015 AECOM/WML Proposal.

The 10 percent design will be documented in a short technical memorandum, which will include preliminary flows and loads and other basic design criteria as well as a description of the main process included in the Baseline Project. A conceptual site plan and process flow diagram will be included.

Deliverables: Five hard copies and PDF of 10 Percent Design TM for review and comment by City staff. Note: the 10% estimate will be provided in Task 3.6 after all the workshops have been held and the major decisions about alternatives have been determined.

Key Understanding: The 10 percent design package represents AECOM/WML initial alternative analysis and selection of a best value approach. It is merely a starting point for a collaborative development process and a baseline for comparing additional alternatives for improvement. The key question is what additional alternatives would the City like to have evaluated and discussed during the Workshop phase design development process?

Meetings/Travel: None – review and discussion of the 10 percent design package will occur during the three-day site visit under subtask 2.3.

Information and Services Provided by Others: None.

Sub Task 2.2 – Flow and Loads and Existing RWCF Performance Review

Objective: Determine design flows and loads as well as phasing options for the Project. Identify any performance or operational issues at the existing plant that need to be addressed by this upgrade and improvement project.

AECOM/WML Activities: Perform a comprehensive review of existing plant performance data and modify or confirm AECOM/WML initial analysis of design influent flows and loads. Closely assess the potential for implementing the project in more than one construction phase, and quantify the benefits to the City of deferring capital investment until needed. AECOM/WML will also evaluate existing performance and operating issues at the RWCF.

Key deliverables from the task will be documented in a technical memorandum and will include design flows and loadings analyses, a phased implementation plan, and outline of additional sampling needs to best characterize the RWCF wastewater so that Biowin modeling can be performed during design development.

Deliverables: Five hardcopies and Word version of technical memorandum for review and comment by City staff, and five hard copies and PDF of the final technical memorandum.

Key Understanding: Early establishment of design flows and loads is critical to maintaining the project schedule yet is also critical to establishing plant capacity requirements. Thus, it is very important to assemble all relevant information to reach an appropriate conclusion. Early agreement on these design loads between the City and the design team is a fundamental milestone in meeting the project's goals. Early identification of existing performance and/or operational issues will allow these problems to be most efficiently addressed by the evolving project scope of work.

Meetings/Travel: After issuance of a draft technical memo, a half-day meeting will be held with City to review findings and results of the investigation. Three AECOM/WML team members will attend.

Information and Services Provided by Others: City to provide updated plant data summaries in an Excel spreadsheet format. AECOM/WML will interview key City staff to provide a list of operational concerns, ranging from performance to maintenance issues, to allow the design team to focus on potential solutions.

Sub Task 2.3 – Initial Site Visit and Data Collection

Objective: Provide the opportunity to AECOM/WML design discipline leads and other members of the design team the opportunity to visit the RWCF, investigate in-situ RWCF issues and opportunities, and interact with City's operation and maintenance staff.

AECOM/WML Activities: The A/E team will visit the RWCF to collect data, familiarize with the different facilities and discuss plant operations with City staff. Design team leads for all disciplines will participate in a three day site

visit. Disciplines included are process, mechanical, structural, architectural, electrical, instrumentation, operations, and constructability.

Three weeks before the site visit, a data request will be submitted to the City to obtain baseline information for each discipline.

The last day of the site visit will be devoted to a meeting to identify the overall range of alternatives for each process area that will be discussed and analyzed in the Task 3 Workshops. In addition, this meeting will be used to select evaluation criteria, both technical and non-technical. A brainstorming process will be used to develop the list of non-cost factors considered important drivers in the selection of the most appropriate alternatives. Non-cost items could include environmental benefits, process reliability and operability, health and safety, and consideration of local community impacts including site design, environmental nuisances (e.g. noise, odors, traffic), landscaping and lighting systems. These non-cost factors will then be given a relative weight to indicate their importance. This will be used by AECOM/WML to assemble all the relevant information needed for decision-making during future workshops.

Deliverables: PDF with data request, agenda for site visit, and minutes of meeting on identification of range of alternatives and evaluation criteria.

Key Understanding: Assembling relevant background information can be a tedious process but is fundamental to getting the project moving forward with the right information. City participation is also essential to determine the workshop evaluation criteria so that the Task 3 workshops can be as productive as possible.

Meetings/Travel: A three-day site visit is anticipated with meetings with the City to start and end the visit. Up to ten AECOM/WML team members will attend.

Information and Services Provided by Others: A list of information needs will be sent to the City before the visit but in general will include those items not already provided to the AECOM/WML during the proposal process such as: design drawings, current power costs and monthly kwh consumption, current chemical usage and costs, annual operating costs including operating and maintenance labor hours and costs, equipment repair and replacement costs, and utility design data including natural gas, city water, and fire protection water availability and pressure. Data dumps from the City's CMMS system into an excel spreadsheet will be requested so that maintenance costs by process area can be determined

Task 3 – Phase 1 Design Workshops and Field Investigations

The design workshops facilitate collaboration and communication of the project design with a specific function and purpose to each workshop. Design workshops will be focused on subject areas with a specific purpose and will include the appropriate team members from the City and AECOM/WML. The subtasks presented below outline the anticipated design workshops.

Sub Task 3.1 – Main Process Workshops (Three Total)

Objective: Evaluate and analysis the major unit process treatment alternatives that will meet the project performance goals and make a preliminary selection of preferred major unit process options.

AECOM/WML Activities: Individual workshops will be held to discuss process options for Headworks (and primary treatment), secondary treatment/biological nitrogen removal, and tertiary treatment (filtration and disinfection).

Prior to the workshops, the AECOM/WML/Lyles team will evaluate capital and operating cost differences for the different alternatives and present this for team discussion during the workshop together with technical and non-technical evaluation criteria (note: options for each unit process were previously selected in collaboration with the City in Task 2.3).

Deliverables: A workshop agenda will be issued at least three days before the meeting. A summary of workshop findings will be issued within 15 days after the meeting. Further documentation of workshop materials will be provided in subtask 3.6.

Key Understanding: The main purpose of the Main Process Workshops is to facilitate effective collaboration between the City and AECOM/WML to allow the selection of preferred unit process options that will be verified by subsequent design development. This workshop will provide the basis for the main processes for an updated 10 percent design and cost estimate as described in Task 3.6.

Meetings/Travel: Three full-day workshops will be held to evaluate alternatives for the Headworks (and primary treatment), Secondary Treatment, and Tertiary Treatment. Five AECOM/WML team members, including DB project manager, design manager and process lead, will attend. All three workshops will be held during the same week.

Information and Services Provided by Others: City to attend workshops with key staff to provide input on alternatives and selection of preferred major unit processes.

Sub Task 3.2 – Other Process Workshops (Three Total):

Objective: Evaluate and analyze three other unit process treatment alternatives and make a preliminary selection of the preferred unit process options.

AECOM/WML Activities: Individual workshops to discuss process options for weather management & and solids handling are planned as part of this Sub Task. A third workshop on any other process component that the City feels should also be discussed in a workshop format (e.g., inter process pumping) is also included.

Similar to the main process workshops, the AECOM/WML/Lyles team will evaluate relative capital and operating/maintenance cost differences for the different alternatives and present this for team discussion during each workshop together with technical and non-technical evaluation criteria.

Deliverables: PDF of workshop agenda will be issued at least three days before the meeting. A summary of workshop findings will be issued within 12 days after the meeting. Further documentation of workshop materials will be provided in subtask 3.6

Key Understanding: These Workshops are a forum for collaboratively reviewing and evaluating options and then selecting the preferred options for moving forward. The selection of all options will be verified by subsequent design development.

Meetings/Travel: Three half-day workshops will be held to discuss and select alternatives for the following dependent processes: Wet Weather Management & Wetland, Solids Handling, and Other (TBD). Up to four AECOM/WML team members, including design manager and process lead, will attend. All three workshops will be held during the same week.

Information and Services Provided by Others: City to prioritize meeting attendance of the appropriate staff for these key workshops so that fundamental decisions can be made for moving forward.

Sub Task 3.3 – Personnel Facilities and Architectural Programming Workshop

Objective: Interact with City staff to analyze, collaborate, and make decisions on changes to existing operational needs and practices at the RWCF.

AECOM/WML Activities: An initial workshop to discuss personnel facilities (buildings and control areas) is included in Phase 1. An initial summary of existing problems and potential solutions is provided in Table 1. This will serve as a starting point for discussion, evaluation, and analysis during the workshop.

Prior to the workshop, prepare a summary of the anticipated changes and improvements to support personnel and facilities to present during the workshop to receive input and exchange ideas with City staff.

Schedule and attend workshops with the appropriate team members. Provide clear agendas that specify the purpose of the workshop, overview of topics and issues, and expected decisions. Prepare a summary of the results of the workshops.

Deliverables: A workshop agenda will be issued at least three days before the meeting. A summary of workshop findings will be issued within 12 days after the meeting. Further documentation of workshop materials will be provided in subtask 3.6

Key Understanding: The main purpose of the Personnel and Facility Workshops is to collaborate with the City to identify changes and improvements to the existing operational needs and practices and make decisions on project elements going forward.

Meetings/Travel: One full-day workshop will be held with up to three AECOM/WML staff. Others to join by video conference as needed.

Information and Services Provided by Others: City to attend workshops with key facility staff to provide input on personnel and facilities improvements.

Sub Task 3.4 – Site and Roadway Layout Workshop

Objective: Interact with City staff to brainstorm and make decisions on site and roadway layouts.

AECOM/WML Activities: A workshop to discuss facilities layout and site circulation plan is included in Phase 1.

Prior to the workshop, prepare a summary of proposed changes and improvements to the existing plant site which will be presented during the workshop to receive input and exchange ideas with City staff.

Schedule and attend workshops with the appropriate team members. Provide clear agendas that specify the purpose of the workshop, overview of topics and issues, and expected decisions. Prepare a summary of the results of the workshops.

Table 1 - Personnel Improvements Approach

Building	Staff Requirements	Existing Problems	Recommendations
Administration, Laboratory and Engineering Building Complex			
<ul style="list-style-type: none"> Primary occupied facility Located adjacent to the visitor's vehicle entry and parking at the Navy Drive site entry Includes an entry lobby with visitor's reception, administrative offices, conference rooms, the laboratory complex, restrooms and a break room. Public entry offers pedestrian access to the secure side of the perimeter fence line Does not have enough space for the engineering staff, so a temporary plywood structure was constructed 30 years ago directly behind the administration building 	<ul style="list-style-type: none"> 13 total employees in the Administration Area 7 employees in the Laboratory 15 employees and two interns for the Engineering Group 	<ul style="list-style-type: none"> Engineering staff structure was meant to be temporary <ul style="list-style-type: none"> Too small for their needs, lacks environmental comfort and does not comply with accessibility requirements. File storage takes up half of the current building <ul style="list-style-type: none"> There is a need for a separate file storage facility Laboratory is too small and the exhaust fumes are too close the Administration Building air-handling inlets <ul style="list-style-type: none"> Requires material samples to be dropped off on a continuing basis. Currently, they are carried through the administration lobby Needs access for truck delivery Requires space for sample and equipment storage Requires a 24 hours HVAC system Facility does not comply with accessibility requirements 	<ul style="list-style-type: none"> Administrative spaces will be remodeled and made accessible Restrooms and break room will be enlarged and made accessible Environmental Group will be relocated to the new laboratory area. Current laboratory space will be occupied by the Engineering Group. Space will double in size by expanding the Administration Building to the east Laboratory area will be relocated to a separate free-standing structure, directly south of the Administration public parking area, with double the current area of the lab. It will include restrooms, a break room and a conference room New laboratory will have two key site elements: <ul style="list-style-type: none"> Direct access to the public parking area for items being dropping off for testing at the lab Access at the south elevation for a team boat to drop off specimens collected in the field for testing. This location provides maneuverability to allow no back-up requirements for the vehicle towing the boat
Safety Building			
<ul style="list-style-type: none"> Safety Building is scheduled for demolition 	6 total employees		<ul style="list-style-type: none"> Relocate current Safety Building staff to the new Laboratory Building.

Environmental/Operations Support Building			
<ul style="list-style-type: none"> Space includes both the Environmental staff and the Operations Support staff Space is an administrative function, yet the Operations Support function needs to remain close to the Operations area 	<ul style="list-style-type: none"> 7 employees in the Environmental Group 7 employees in the Operations Support Staff 	<ul style="list-style-type: none"> Crowded with no conference room, break room or restrooms Odor problem since the building is located directly over the main process inlet for untreated sewerage for the site 	<ul style="list-style-type: none"> Environmental Group will be relocated to the Laboratory building Additional space allows space for a new break room and restrooms for the Operations Support Group Office spaces will be remodeled with new furniture
Operations Building			
<ul style="list-style-type: none"> Located within a major process facility building Occupied spaces include a Control Room, office, break room and rest room/locker rooms Control Room and Break Room are located on the second level Restrooms and lockers are on the first level In addition to the stair, there is elevator access to the second level 	<ul style="list-style-type: none"> 24 hour operation, 2 shifts 20 employees full time (13 day shift, 8 + support staff) 	<ul style="list-style-type: none"> Restrooms and lockers rooms are in poor condition and are not accessible Operations Room, Break Room and offices are poorly laid out and in poor condition Elevator that accesses the second level is not operable 	<ul style="list-style-type: none"> Modify the lighting, furniture in the Operations Room to make it a show place for visitors and a comfortable workplace for employees Office spaces will be remodeled with new furniture Break room will be remodeled Upgrade the restroom/shower/locker rooms and make them accessible
Maintenance And Collection Building			
<ul style="list-style-type: none"> Work stations for maintenance and collection employees, restrooms, a conference room and a maintenance shop 	<ul style="list-style-type: none"> 15 employees, Collections 8 employees, Maintenance 	<ul style="list-style-type: none"> Inadequate office space for the Maintenance and Collection functions 	<ul style="list-style-type: none"> Expand the current building to the north to provide addition office space Remodel the current building spaces
Tertiary Support Building			
<ul style="list-style-type: none"> Located at a remote site, west of the main Waste Water Treatment Facility Work stations for maintenance and collection employees, restrooms, a conference room and a maintenance shop 	<ul style="list-style-type: none"> 5 employees 	<ul style="list-style-type: none"> Additional space is required for the Senior Plant Supervisor Existing engine generator room is no longer used 	<ul style="list-style-type: none"> Current engine generator space will be used for a new office for the Senior Plant Supervisor. Move the lockers to this area. Provide new restrooms that are accessible. The additional space needs is made available by relocating the locker function

Deliverables: PDF of workshop agenda will be issued at least three days before the meeting. A summary of workshop findings will be issued within 12 days after the meeting. Further documentation of workshop materials will be provided in subtask 3.6

Key Understanding: This workshop will provide the basis for the roadway and site layout for an updated 10 percent design and cost estimate.

Meetings/Travel: One half-day workshop will be held to discuss site and roadway layouts. Up to four AECOM/WML team members, including DB project manager, design manager, will attend. Others to join by video conference as needed. The workshop will be held during the same week as the electrical and instrumentation workshop.

Information and Services Provided by Others: City to attend workshops with key facility staff to provide input on site and roadway layout.

Sub Task 3.5 – Electrical and Instrumentation Workshop

Objective: Interact with City staff to analyze and collaborate on electrical and instrumentation issues and needs at the Regional Wastewater Control Facility (RWCF).

AECOM/WML Activities: A workshop to discuss electrical and instrumentation needs for the Project is included in Phase 1.

Prior to the workshop, prepare a summary of proposed changes and improvements for the electrical and instrumentation components of the Project will be presented during the workshop to receive input and exchange ideas with City staff. This will include draft process control descriptions to solicit input from RWCF Operations and Maintenance staff on computer system requirements for not just monitoring but computer control, including state-of-the-art fail safe control. A conference call will also be held before the workshop between the City/AECOM-WML project team and the City's SCADA master planning consultant to make sure the overarching goals of the program are captured and that the electrical and instrumentation workshop discussion and results is consistent with the overall master plan.

Deliverables: A workshop agenda will be issued at least three days before the meeting. A summary of workshop findings will be issued within 12 days after the meeting. Further documentation of workshop materials will be provided in subtask 3.6

Key Understanding: This workshop will provide the basis for the electrical and instrumentation concepts for an updated 10 percent design and cost estimate and will build upon the SCADA Master Plan which is under development by others

Meetings/Travel: One full-day workshop will be held to discuss electrical and instrumentation. AECOM/WML team members, including design manager, process lead, electrical lead, and I&C lead, will attend. Others to join by video conference as needed. The workshop will be held during the same week as the site and roadway workshop.

Information and Services Provided by Others: City to attend workshops with key facility staff to provide input on electrical and instrumentation. Receipt of a City approved SCADA Master Plan at least 4 weeks prior to this workshop.

Sub Task 3.6 –10 Percent Design Summary and Cost Estimate

Objective: Based on the workshops, provided an updated 10 percent design package and revised cost estimate.

AECOM/WML Activities: AECOM/WML will revise and update the 10% design package to incorporate the findings of all the workshops. Based on the quantities and breakdown of materials and labor in the estimate, AECOM/WML will develop a draft rationale for self-performing work for the City's review and consideration. This

argument for self-performance will be updated with each iteration of the estimate up to the final design build pricing.

Deliverables: Five hard copies and one electronic copy in Word or Excel of 10 Percent Design TM and cost estimate for review and comment by City staff. Final documentation of workshop materials and findings will also be provided.

Key Understanding: The post-workshop 10 percent design summary will provide the foundation for the main elements of the Project and will serve as the launching pad for moving the overall project forward. It is critical for project implementation that all parties agree on the design basis for moving forward.

Meetings/Travel: None

Information and Services Provided by Others: City to closely review the updated 10% design package and provide a timely issuance of review comments.

Sub Task 3.7 – Subsurface Investigations:

Objective: Collect subsurface information to determine soil and groundwater conditions as well as corrosivity potential to assist on the development of alternative analyses, detail design activities, and construction cost estimates. These investigations will begin once the locations of major new structures have been established.

AECOM/WML Activities: The AECOM/WML team will conduct subsurface investigations to supplement the existing information from the previous investigations at the RWCF site. This task include the field explorations detailed in Table 2

Table 2- Proposed Field Explorations

Area	Field Explorations
New Influent Pumping Station	Two 50-foot deep test borings – Since these borings will be converted to slug test wells, they will be advanced using hollow-stem augers (to prevent bentonite smearing on the side of the holes).
New Fine Screening & Grit removal	One 30-foot deep test boring.
Primary Clarifiers	None
New Aeration Basins	<ul style="list-style-type: none"> One 50-foot deep test boring. Two 35-foot deep test borings. We propose converting these two of these borings to slug test wells. They will be advanced using hollow-stem augers. The 50-foot boring would be used for liquefaction assessment.
New Blower Building	<ul style="list-style-type: none"> One 50-foot deep test boring. One 30-foot deep test boring.
New Secondary Clarifiers	Two 75-foot deep Seismic Cone Penetrometers (SCPTs) – For assessment of liquefaction potential.
New RAS Pump Stations	Three 30-foot deep test borings.
New Main Plant Area flow EQ (former secondary clarifiers)	Two 75-foot deep Seismic Cone Penetrometers (SCPTs) – For assessment of liquefaction potential.

Area	Field Explorations
<i>New Disk Filters (if in project scope)</i>	<ul style="list-style-type: none"> • One 50-foot deep test boring • One 30-foot deep test boring
<i>New UV disinfection (if in project scope)</i>	Two 30-foot deep (each) borings
<i>New Tertiary Plant Area EQ (former chlorine contact channel)</i>	Five 15 foot deep (each) borings
New Sludge Dewatering Building	<ul style="list-style-type: none"> • One 50-foot deep test boring. • One 30-foot deep test boring
New Digested Sludge Pipeline & Equalized Filtrate Return to AB	<ul style="list-style-type: none"> • Drill five 15-foot deep test borings along the proposed alignment. • Field explorations will be completed using truck mounted drill and CPT rigs.

Laboratory tests will be performed in accordance with current ASTM standards on selected samples to evaluate the physical and engineering characteristics of the subsurface materials. These tests may include moisture content, dry unit weight, grain-size distribution, Atterberg Limits, Expansion Index, compaction characteristics, soil strength testing and consolidation. Several suites of corrosion testing will also be performed to yield values for pipeline analysis. The final selection of testing type and frequency will be determined after the field exploration

Since dewatering and associated assessment of groundwater quality may be required at the proposed influent pump station and new aeration basins; AECOM/WML proposes converting the two proposed borings for the new influent pump station, and the two 35-foot deep proposed borings at the aeration basins to slug test wells to adequately assess the aquifer properties. Soil gradation testing will be performed from select soils samples obtained from the affected aquifer zone at each boring location. Baseline water levels in the test wells will be monitored by installing a data logger device in each well. Water level data within the test and monitoring wells will be compared against the actual slug test water levels to assess differences and aid in evaluating the local aquifer properties.

A slug test will be conducted in each test well. A slug or pre-fabricated “dummy” of known volume will be lowered into the well until fully submerged. The displaced water will be automatically recorded by the data loggers previously installed. We will also complete at least two suites of water quality testing on groundwater samples.

A site conceptual model will be developed using readily available information about the site (i.e., boring logs, grain size analyses, aquifer test results, site plans, and previous reports). The conceptual site model (CSM) will aid us in our assessment of hydrogeologic conditions at the site. The software used to estimate hydraulic properties for the aquifer testing data will be AQTESOLV created by HydroSOLVE, Inc.

Using the data generated from the aquifer test, CSM and the Universal Well Formula or Theis Non-Equilibrium Formula, we will estimate a range of the aquifer parameters. Hydraulic conductivity and transmissivity values will allow us to estimate a range of anticipated flows during dewatering.

Corrosion protection analysis: Evaluate corrosion potential and corrosion prevention requirements for buried infrastructure, collecting and reviewing relevant information, performing site investigations, collecting soil samples for laboratory analysis, and evaluating potential electrical coupling and stray current interferences. Compile background information, analysis results, and design recommendations in an appendix to the BDR.

Deliverables: None initially. (A draft Geotechnical Report and draft Corrosion protection analysis will be included as appendices in the draft BDR. A final version will be incorporated into the Final BDR.)

Key Understanding: The location and extent of the field investigations will be further refined based on revisions to the proposed site plan and associated facilities. The subsurface program will begin once the workshops are

complete and the project team is sufficiently confident that the location of all new major facilities has been determined.

Meetings/Travel: A representative from AECOM/WML's Sacramento office will travel to the Stockton site to supervise the geotechnical investigations. Kleinfelder will mobilize the necessary staff and equipment to conduct their work.

Information and Services Provided by Others: City to provide available past geotechnical data not already provided during the proposal process, including subsurface investigations and analyses conducted at the RWCF prior to the beginning of the field investigations.

Sub Task 3.8 – Surveying and Utility Location

Objective: Collect surveying and utility location information to supplement existing available information and fill information gaps to assist on development of alternative analyses, detail design activities, and construction cost estimates.

AECOM/WML Activities: Perform surveying activities to determine overall topography and structure elevations as well as potholing activities to verify location of buried infrastructure.

AECOM/WML will review the City's legal descriptions and mapping of the WWTP site, establish vertical and horizontal controls including ties to the California Coordinate System, conduct aerial and field surveying as necessary, and prepare digital orthophotographic and photogrammetric mapping as necessary to prepare Phase 1 work products and complete the final design and construction of the Facilities during Phase 2.

The horizontal and vertical coordinate system and data will be based on the North American Datum of 1983 (NAD83) converted to the California Grid Coordinate System of 1983, Zone 3 (CA83111-F) as referenced by the City of Stockton Horizontal Control System. The vertical datum will be based on the National Vertical Datum of 1929 (NGVD29) as referenced by available City of Stockton 1996 Local Adjustment (COS96) benchmarks.

Contractor will conduct potholing if necessary to locate buried infrastructure, verify as-built locations, and determine utility locations throughout the project site.

Deliverables: None. All information collected in this task will be incorporated into the BDR.

Key Understanding: The exact extent and scope of the surveying and utility is not fully determined yet and will depend on the selected process options and existing information.

Meetings/Travel: A representative from AECOM/WML's Sacramento office will travel to the Stockton site to supervise the survey and potholing subcontractors, which will mobilize the necessary staff and equipment to conduct their work.

Information and Services Provided by Others: City to provide past survey data not already provided during the proposal process, location of historical benchmarks, property survey of newly acquired land to the north of the main plant area, right of ways, easements, etc.

Sub Task 3.9 – Hydraulic Profile Modeling

Objective: For the selected process configuration, develop and revise hydraulic profile for the proposed improvements and identify any existing bottlenecks

AECOM/WML Activities: Use existing drawings and conceptual design information on the proposed improvement to develop a hydraulic model of the new and existing infrastructure. Model to be developed in AECOM's plant hydraulic profile (PHP) program.

Deliverables: Draft hydraulic profile. All information collected in this task will be incorporated into the BDR.

Key Understanding: The goal of the modeling will be to minimize or avoid any inter-process pumping after the new influent pump station, as well as set elevations of major new facilities.

Meetings/Travel: None.

Information and Services Provided by Others: City to provide any past inspection reports on the condition of existing pipelines under the river.

Sub Task 3.10 – Site Visits to other POTWs

Objective: Key members of the City & AECOM/WML team will make up to two site visits to similar facilities

AECOM/WML Activities: Investigate site visit options and review with City to determine the best place(s) to visit in the central valley area. Set up logistics for the site visit and prepare a pre-visit information package for City review.

Deliverables: Pre-visit information package. Notes documenting key observations and lessons learned from each visit.

Key Understanding: The new facility under construction at Davis and perhaps other representative projects will be considered for visitation to learn as much as possible about others experience in implementing similar work including both construction, operations, and engineering perspectives.

Meetings/Travel: Up to two visits to facilities within 150 miles of Stockton. Up to four AECOM/WML staff will attend.

Information and Services Provided by Others: Dates and times of visits to be coordinated with existing facility owners.

Task 4 – 25 Percent Design Package:

Sub Task 4.1 – Draft Basis of Design Report

Objective: Further develop design concepts while formally documenting project scope and rationale in a draft Basis of Design Report (BDR). Results from the City review of the Draft BDR, BDR design workshop and VE Study will be incorporated into a Final BDR in accordance with Task 5.1.

AECOM/WML Activities: Prepare a draft basis of design report (BDR) incorporating the results of the workshops and City comments on the 10 percent design package and estimate (Task 3.6). The draft BDR will document all the workshop results, data review and additional data collection, and the proposed scope of work for new and modified facilities. The BDR will document the rationale for all decisions, including capital and lifecycle costs for alternatives, and will present the initial project scope of work for design-build price development.

The BDR for the WWTP will define the overall project goals and design intent and the detailed design criteria for all project components, systems and subsystems such as:

- Average and range of pertinent water quality parameters and chemical dosages
- Review of flows and loads developed during Task 2.2 and recommendations for modifications thereto
- Anticipated unit process flow rates and chemical use and storage requirements
- Wastewater treatment equipment capacities and related design criteria. A Biowin model will be prepared for the proposed secondary treatment process to analyze performance under design loading conditions. The results will be provided in a Secondary Process Technical Memo. A model of the final design must be verified upon project completion.
- Facilities planning in regards to location and orientation of proposed facilities and relation to existing facilities and hydraulic profile

- Foundation, structural and architectural design criteria
- SCADA system architecture and outline process control descriptions for each unit operation and draft (Process and Instrumentation Drawings (P&IDs). Evaluate the incremental cost of control versus monitoring and make recommendations to the City
- Physical and electronic security/surveillance systems
- Electrical power supply and distribution strategy
- Preliminary phasing approach demonstrating how new treatment processes are phased in as old processes are phased out
- Preliminary site layout(s)
- Permitting requirements
- Preliminary description of operations staffing needs, including licensed operators, technicians and supervisors, and associated support equipment.
- Documentation of Life-Cycle costs for alternatives as presented during the Workshops (considering power, chemical, and staffing costs along with degree of automation (present net worth analysis).

Schedule and attend design review workshop with the City and appropriate team members. The purpose of the workshop will be to review the draft BDR, 25 percent drawings, and 25 percent cost estimate (collectively known as the 25 percent design package). Prepare a summary of the results of the design review workshop.

Participate in City Council presentations as requested by City. A total of two City Council presentations are anticipated during Phase 1.

Deliverables: Five hard copies and one CD of:

- Draft Basis of Design Report
- Preliminary drawings including conceptual site plans; major process general arrangement plans and sections; process flow diagrams and mass balance; and Draft P&IDs
- 25 percent Estimate with updated summary of the benefits of self-performance
- 25 Percent Design Review Workshop Summary
- City Council Presentation (if requested)

Key Understanding: The main purpose of the draft BDR is to further develop the design while formally documenting project scope and rationale. Sufficiently develop the design so that the 25 percent cost estimate can be prepared. The use of outline and tabular formatting will be employed for most of the BDR to facilitate understanding of the design intent and the logic of design calculations without requiring City reviewers to read extensive text. City comments on the 25 percent design package and results of the VE study on the 25 percent design package will be incorporated in the BDR documents for the next project phase.

Drawings for all design phases will be prepared with AutoCAD or Revit, and in accordance with the United States National CAD Standard® (NCS). Design plans will be developed utilizing industry standard scales, in English (not metric) engineering units.

Specifications for all design phases will be prepared in Microsoft Word using the industry standard. AECOM/WML's budget for this task assumes no Division 0 and Division 1 specifications will be required to be prepared by AECOM/WML, and that AECOM/WML's master specifications will be used as a basis for the technical provisions.

Meetings/Travel: A design review workshop will be held to discuss the final 25 percent design package with the City and appropriate AECOM/WML team members. A half-day meeting is anticipated with 5 AECOM/WML staff and four VE/Constructability specialists. The design review meeting will also be used to kick off the VE review meeting with an additional meeting held to review and evaluate VE team findings under Sub-Task 4.2.

Information and Services Provided by Others: City's input on the draft BDR, process control descriptions, P&IDs and cost estimate. City's input from review of 25 percent design package and cost estimate. City's attendance and participation in the design review workshop and VE findings meeting.

Sub Task 4.2 – VE/Constructability Review

Objective: Provide a VE/constructability review of the 25 percent design submittal as a tool to identify capital cost savings potential together with O&M cost estimates to evaluate life cycle cost savings potential.

AECOM/WML Activities: Conduct value engineering (VE) and constructability reviews with AECOM/WML technical, construction, and operations specialists to evaluate alternative, less-costly means of achieving City's project value objectives. A four-person team of senior staff – two from AECOM and two from WML are proposed. The VE/constructability review team will evaluate alternatives, select the best ideas in relation to the project value objectives (e.g. life-cycle cost, safety, maintainability, schedule, etc.) and develop alternative design concepts for the City and the design team consideration. Each alternative will be substantiated with written descriptions, sketches, technical backup, cost estimates, and consideration of advantages and disadvantages.

A summary of VE/constructability review findings will be presented to the City and a report prepared summarizing the scope of analysis, methodology, alternative design concepts, associated cost savings potential, and recommendations. The VE/constructability review team will work with the City and the Contractor's project manager and design team in accepting or rejecting alternatives to incorporate into the Facilities design.

Deliverables: Resumes of proposed VE team members to be issued for City review and approval 30 days prior to the meeting date. VE/Constructability Report (in an appendix to the BDR)

Key Understanding: AECOM/WML will assemble a senior team of construction and design professionals to take an independent look at proposed project components and suggest any alternatives that provide better value for the City's consideration. This task will follow the Design review workshop in Sub-Task 4.1

Meetings/Travel: A meeting will be held to present results of the City/AECOM/WML VE team review. A half-day meeting is anticipated with 5 AECOM/WML staff and four VE/Constructability specialists.

Information and Services Provided by Others: City's input on the results of VE/constructability report. City's attendance and participation in the VE findings meeting

Task 5 – 50 Percent Design Package

Sub Task 5.1 – Final Basis of Design Report

Objective: Finalize design concepts and formally document project scope and rationale in a Final BDR. Final BDR will include, at a minimum, all elements of the Draft BDR and other items as needed.

AECOM/WML Activities: Incorporate the findings of field investigations and results of the 25 percent review workshop and VE/constructability workshop to prepare the final BDR.

Deliverables: Five copies of the Final Basis of Design Report

Key Understanding: The main purpose of the Final BDR is to finalize the design concepts and scope of work sufficiently so that the 50 percent design drawings and cost estimate can be prepared.

Meetings/Travel: Full day meeting to review the 50% design package.

Information and Services Provided by Others: City's input on initial design packages and results of the VE/constructability report. City's input from review of the 50 percent design package and cost estimate.

Sub Task 5.2 – 50 Percent Design Package

Objective: Preparation of 50 percent discipline design and updated cost estimate.

AECOM/WML Activities: Incorporate City review comments on the 25 percent design drawings and VE/Constructability review changes and develop discipline design packages for City review. A preliminary list of the anticipated drawings is as follows:

- Drawing index(ices)
- Design Criteria
- Mass Balances (as documented in the Secondary Process TM)
- Standard details for each discipline
- Civil site layouts and grading, paving, and outside piping plans and sections
- Architectural plans, sections and elevations
- Structural plans and sections
- Process schematics and general arrangement plans and sections
- Single-line diagrams
- Electrical site plans and power plans
- SCADA system architecture, P&IDs and block diagrams
- Security/surveillance system architecture

Update latest cost estimate based on results of 25 percent design package review and 50 percent design package.

Deliverables: Five copies of 50 percent Design Package, Updated Cost Estimate, and updated summary of the benefits of self-performance.

Key Understanding: The main purpose of the 50 percent design package is to finalize the scope of work and develop the design sufficiently so that the 50 percent cost estimate can be prepared. The final scope of work and 50 percent design packages will set the stage for final design packages and development of the Design-Build Price. Prior to the Task 7 – Development of the Phase 1 Proposal, the City needs to make a decision on extent of self-performance for the project.

Meetings/Travel: None (meeting to review 50 percent drawings combined with Sub Task 5.1)

Information and Services Provided by Others: City's input on initial design packages and results of the VE/constructability report. City decision on the extent of self-performance.

Task 6 – Permitting

Objective: Develop a plan to be implemented in Phase 2 to timely obtain all permits necessary to build and operate the proposed improvements at the RWCF.

AECOM/WML Activities: Coordinate with the City's NPDES Compliance consultant to contact the appropriate regulatory agencies, resolve permitting issues identified in Phase 1, and prepare a schedule and action plan for obtaining all permits that are required to construct and operate the Facilities. Some of the regulatory agencies, such as the RWQCB and Air Board, will need to be contacted by the City so that early and regular consultation is achieved about the Facilities design.

AECOM/WML will provide the City's CEQA consultant with information to prepare the EIR. Ideally, this would occur once the Final BDR is ready but earlier action may be necessary to meet schedule requirements. The City,

AECOM/WML and the City's CEQA consultant will meet early in the project to discuss schedule requirements timing requirements for project information.

AECOM/WML will incorporate mitigation measures and restrictions from the Final Environmental Impact Report (FEIR) into the BDRs, as applicable, and develop a permitting action plan.

Deliverables: Five hardcopies and PDF of draft schedule and action plan for review and comment by City staff, and five hardcopies and PDF of final schedule and action plan.

Key Understanding: AECOM/WML will provide preliminary preparation of all necessary permit applications and facilitation of regulatory agency approval of all permits that are Contractor's responsibility. City will maintain a lead role with the Central Valley Regional Water Quality Control Board and the Air Board. It is understood that applying and securing these permits will be part of Phase 2 of this Project.

Meetings/Travel: AECOM/WML permitting lead to attend up to 4 meetings and conference calls as needed.

Information and Services Provided by Others: City will sign permit applications, furnish permit application fees, and attend permitting coordination and review meetings with regulatory agencies as necessary. City to provide copies of all relevant existing permits including NPDES and Air permits, plus communications with RWQCB and the Air Board. City staff or City's NPDES Compliance consultant will assist in timely contacting regulatory agencies to gather information to prepare schedule and action plan for permitting.

Task 7 – Phase 2 Proposal and Design-Build Price Development

Objective: Further advance the design from the 50 percent design package to at least 60 percent design documents and complete a Phase 2 proposal including development of a Design-Build Price based on a combination of competitive bidding and self-performing construction work.

AECOM/WML Activities: AECOM/WML will continue to advance the design during Task 7, and the design drawings will be improved from the 50 percent level to the 60 to 75% range. Using the Phase 1 work products, the AECOM/WML team will obtain pricing for equipment and materials and solicit bids for construction of the proposed project. The AECOM/WML will then prepare and submit a detailed Phase 2 proposal for City review. The Phase 2 Proposal will detail all the necessary services for final design, permitting, equipment and materials procurement, physical construction of the Project, engineering design support during construction, construction management, start-up, commissioning and acceptance testing and any additional contracted services for the duration of the Project. It shall contain a resource-loaded construction schedule, Substantial and Final Completion dates, and the City-approved Startup, Commissioning and Acceptance Testing Plan. City will advise AECOM/WML in advance whether the Phase 2 Proposal should include an allowance for furniture, fixtures and equipment.

Proposal based on the bidding and pricing results

Phase 1 services will conclude upon the Contractor's meeting with the City to discuss the Phase 2 Proposal, making agreed upon revisions to the Phase 2 Proposal, and submitting ten (10) copies of the final Phase 2 Proposal within one month after the review meeting with the City. The final Phase 2 Proposal shall specify the design-build price and contract time for Phase 2 based on the bidding and pricing results and the Contractor's fees for final design, permitting, equipment and materials procurement, physical construction of the Facilities, engineering design support during construction, construction management, start-up, commissioning and acceptance testing and any additional contracted services for the duration of the project

The AECOM/WML team will prepare a detailed cost estimate for design-build implementation of the improvements proposed in the 60 percent design documents. Bids will be collected from qualified subcontractors and suppliers for the various preliminary design work packages included in the 60 percent design documents. Alternative approaches and materials of construction will be evaluated using bidding or through in-house cost

estimates and final recommendations will be made to the City. After completion of bidding and pricing efforts, the Phase 2 proposal will be updated to summarize a description of the recommended project approach and the details of the design-build cost estimate.

The design-build price will include a contingency fund. In general, the contingency fund will be used for costs that are incurred in performing items of work that are not included in a specific line item of the project scope at the time the design-build price is established. For example, such costs could include trade buy-out differentials, overtime, acceleration, costs in correcting damaged work, unforeseen site conditions, and refinement of design details within the scope of work upon which the Design-Build price is based.

Deliverables: 5 hard copies and one PDF of the Phase 2 proposal documenting the design-build project scope of work, 60 percent design drawings and detailed cost estimate. A second presentation to the City Council if requested.

Key Understanding: The AECOM/WML team will provide Design-Build price for the project using an open book bidding process. At the City's discretion, certain portions of the work such as concrete work, installation of process equipment and process piping, and electrical and SCADA work can be self-performed by the AECOM/WML team. To provide clarity during the bidding process and development of the final design-build price, the City will need to make at least a preliminary decision prior to the start of this task.

Meetings/Travel: Two full day meetings, one to review the Phase design package, and the other to review the design-build cost estimate

Information and Services Provided by Others: City input to construction schedule, NTP dates, and any Regional water or Air board constraints.

Task 8 – First Phase 1 Off-Ramp (Optional)

In the event that an agreement on a Contract amendment for Phase 2 between the City and AECOM/WML cannot be reached, the City may require completion of unified sets of plans and specifications for use by the City to solicit competitive bids for traditional construction of the Project. In such circumstances, AECOM/WML will assume the responsibilities as the Engineer of Record and provide traditional engineering services for design, services during construction, project management, and permitting services. This task, which includes all the services requested in Appendix C of the RFP except for engineering services during construction, is described in detail in the following sub tasks.

Sub Task 8.1 – Project Management

Objective: Provide additional project management services for coordination activities, project records and documentation, meetings, and day to day communication associated with Phase 1 Off-Ramp services.

AECOM/WML Activities: Prepare an updated schedule of work products, project management plan as necessary and extend project management activities for the duration of the First Phase 1 Off-Ramp. Continue to issue and maintain a decision log for the project.

Deliverables: Invoices and meeting minutes, decision logs.

Key Understanding: The project manager will be responsible for coordination, organization, control, monitoring, and reporting of activities associated with Phase 1 Off-Ramp services.

Information and Services Provided by Others: Construction management will be the responsibility of a City appointed Construction Manager.

Sub Task 8.2 – Second VE/Constructability Review

Objective: Take a second look at improving the cost-effectiveness of the project

AECOM/WML Activities: Assist the City in conducting a final VE/constructability review for the scope of work in the Phase 1 Design Build price proposal as a tool to identify capital cost savings potential together with refined O&M cost estimates to evaluate life cycle cost savings potential. The final constructability review will be incorporated into and guide preparation of the final plans and specifications.

Deliverables: 60 percent design VE/constructability review workshop including workshop organization, preparation of agenda, and preparation and distribution of workshop summary.

Key Understanding: The City will hire an independent VE team to perform the second VE/Constructability review. AECOM's role will be to assist in information transfer and to incorporate the results.

Meetings/Travel: One day trip for a second full day VE/constructability review workshop but this time with City selected third party team. AECOM/WML project management team will attend with specific lead discipline team members available by video conference by as necessary based on the results of the review.

Information and Services Provided by Others: City to select and pay for the second VE/constructability review team. City's participation in the VE/constructability review workshop.

Sub Task 8.3 – 90 Percent and Design, Construction Schedule, and Cost Estimates Submittal

Objective: Based on comments from the second VE/constructability review, prepare the 90 percent design submittal for traditional bidding and construction of the Facilities.

AECOM/WML Activities: Prepare 90 percent design submittal consisting of plans and specifications conforming to the applicable industry codes and standards. The Designers, checkers, and the Engineer's project manager names will be included in the drawing title blocks and on the cover sheet of the specifications indicating that a thorough QA/QC has been performed and that every aspect of the design is 90 percent complete.

The 90 percent review submittal will address City comments on the 60 percent submittal as well as changes resulting from subsequent technical meetings, correspondence, and design changes as required by regulatory and permitting agencies. It is intended as the last submittal requiring City review and comment. Following the 90 percent submittal review, the City will provide consolidated comments as drawing markups and itemized written comments. Engineer will respond to each comment and submit the responses to the City. Exceptions to comments will require City approval prior to Engineer preparation of the bidding (i.e., 100 percent design) documents.

Prepare an estimated CPM schedule for the Facilities construction, incorporating weather-related delays and any seasonal restrictions imposed by regulatory agencies, and submit schedule to City with 90 percent design submittal.

Prepare 90 percent engineer's opinion of probable construction cost identifying and quantifying all equipment, materials and labor.

Deliverables:

- 90 percent design plans and specifications:
 - Five half size sets of 90 percent design drawings
 - Five sets of 90 percent of specifications
 - One CD containing PDF files of 90 percent design drawings and specifications
- Five bound hardcopies and CD with PDF of final construction schedule
- Five bound hardcopies and CD with PDF of 90 percent design engineer's opinion of probable construction cost.

- 90 percent design review workshop including workshop organization, preparation of agenda, attendance, and preparation and distribution of workshop summary.

Key Understanding: Based on comments from the 60 percent design submittal review, prepare 90 percent design submittal and engineer's opinion of probable construction cost.

Meetings/Travel: A full-day meeting to review the 90% design comments. AECOM/WML project management team will attend with discipline specialists available as necessary by video conference.

Information and Services Provided by Others: City's comments on 60 percent design submittal.

Sub Task 8.4 – Final Design Submittal

Objective: Based on comments from the City review of the 90 percent design submittal, prepare the final design documents for bidding.

AECOM/WML Activities: Based on City review comments from the 90 percent submittal, prepare bidding documents ready for printing and distribution to potential bidders. Submit three paper copies for City verification of incorporation of comments and final acceptance. The City will finalize bidding schedule and provide required bidding information to Engineer for incorporation into the bidding documents and specifications.

Final documents will be stamped by a professional engineer(s) licensed in the State of California, for bidding purposes and to secure required permits. Provide final stamped and signed calculations for structures and other project components. Calculations shall clearly indicate basis of design, references to applicable codes and manuals, and design assumptions. Calculations shall be compiled and organized in binders with table of contents, page titles, references and related project elements.

Prepare final engineer's opinion of probable construction cost identifying and quantifying all equipment, materials and labor.

Deliverables:

- Final plans and specifications for bidding
 - Three half size paper copies for City verification prior to final
 - One full size set of stamped and signed final design drawings
 - Five half size sets of stamped and signed final design drawings
 - One loose bound set and four bound sets of specifications
 - Three bound sets of final stamped and signed calculations for structures and other project components
 - Two CDs containing PDF files of drawings and specifications
- Five bound hardcopies and CD with PDF of final engineer's opinion of probable construction cost.

Key Understanding: AECOM/WML will prepare final design documents ready for printing and distribution to potential bidders. AECOM/WML will prepare a final engineer's opinion of probable construction costs.

Meetings/Travel: One half day meeting to review changes to the final plans and discuss plans for bidding out the work.

Information and Services Provided by Others: City's comments on 90 percent design submittal review. City will provide specification sections covering Construction Specification Institute (CSI) Division 0 and Division 1 for incorporation into the contract documents. The City will finalize the bidding schedule and provide required bidding information for incorporation into the bidding documents and specifications.

Sub Task 8.5 – Permitting

Objective: Provide assistance to the City to obtain building and operating permits and to comply with other permitting terms and conditions, including environmental mitigation requirements.

AECOM/WML Activities: Coordinate with the City and the City's construction manager as needed to assist on permitting compliance activities.

Deliverables: None.

Key Understanding: It is understood that applying, securing, and complying with all project permits that are the City's responsibility. Level of effort provided by AECOM limited to the budget for this task in the proposal.

Meetings/Travel: AECOM/WML permitting lead to attend up to 4 meetings and conference calls as needed.

Information and Services Provided by Others: City or surrogates to request for specific assignments from AECOM/WML as needed.

Sub Task 8.6 – Project Database and CMMS

Objective: Prepare a project database and input for CMMS for use by the General Contractor(s) and construction manager(s) during construction and to facilitate O&M of the Facilities.

AECOM/WML Activities: Develop a project database in Microsoft Access format including all structures, electrical and mechanical equipment, and instrumentation with each component assigned a unique identifier compatible with City-approved numbering systems. At a minimum, each record in the project database shall have the following fields, as appropriate.

- Unique identifier (e.g. equipment number)
- Equipment/structure/device type
- Specification section
- Drawing number
- Capacity
- Horsepower
- Voltage
- Manufacturer
- Model number
- Facility location
- Structure location
- Room location

The 60 percent submittal will include a preliminary version of the project database. The preliminary project database will contain records for all major equipment and structures. Design-related fields shall be included in the project database with preliminary values. The 100 percent submittal shall include the completed project database in electronic format. Additional fields shall be included as determined during other project tasks. The project database shall be structured for use by the General Contractor(s) and construction manager(s) during construction to track submittals, requests for information (RFIs), change orders and testing.

Additionally, the project database shall facilitate O&M of the Facilities by being compatible with the CMMS and O&M manuals. Develop and submit a CMMS database for the Facilities. This database will build upon the project database. The CMMS database will include:

- An organizational flow chart indicating system hierarchy
- Standard database as function of location or unit process including equipment,
- nameplate data, job plan, job steps and maintenance schedule

- Equipment list with tag numbers and parent-child relationships, vendor/manufacture
- information, replacement costs, equipment location and other pertinent information
- Security levels showing allowable users, passwords and database access
- Preventative maintenance and implementation plan with schedules, work order priorities, and maintenance frequencies.

Deliverables:

- Preliminary project database submitted with 60 percent design submittal
- Final database in electronic format
- CMMS database for the Facilities

Key Understanding: The City currently uses Cityworks for its maintenance management at the RWCF. AECOM/WML will prepare a preliminary and final project database for use by the General Contractor(s) and construction manager(s) during construction. AECOM/WML will organize project information into a CMMS database for input to the City's CMMS.

Meetings/Travel: None

Information and Services Provided by Others: City's input and comments based on review of the preliminary project database. City's input and comments on CMMS development and required database format to facilitate uploading of project data into the Cityworks CMMS.

Sub Task 8.7 – Training Plan

Objective: Develop a training plan that adequately prepares designated staff to operate and maintain the Facilities.

AECOM/WML Activities: Consult with City to determine training requirements, and develop training plan that adequately prepares designated staff to operate and maintain the Facilities. The training plan is intended for two purposes: 1) to guide the specifying of General Contractor and equipment manufacturer training requirements and 2) to guide the City and Construction Manager in preparing for training classes in coordination with Facilities start-up.

The training plan will encompass start-up and shutdown procedures, O&M manuals and procedures, the CMMS, and the SCADA and security/surveillance systems. The training plan will identify training needs for the Facilities components and systems, training methods (classroom, field and hands-on), and a Microsoft Project schedule in coordination with the Facilities construction and start-up schedule. The training plan also will identify the responsible party and the supporting parties for each element of the training program.

The plan will include an estimated level of effort for the City, Construction Manager, General Contractor, Engineer, and equipment manufacturer representative(s). Submit the first draft of the training plan to the City with the bidding documents, and finalize the training plan during construction of the Facilities.

Deliverables:

- First draft training plan, submitted with bidding documents
- Final training plan

Key Understanding: AECOM/WML will prepare a training plan developed to adequately prepare designated staff to operate and maintain the Facilities.

Meetings/Travel: None

Information and Services Provided by Others: City's input on training requirement and development of the draft training plan. City's input and comments from review of the draft training plan.

Sub Task 8.8 – Start-up and Testing Plan

Objective: In taking the Phase 1 Off-Ramp, the City will forgo the Initial and Final Acceptance Testing requirements of the Contract, yet the Facilities testing requirements are an essential element of the General Contract specifications. Engineer shall consult with City to develop the start-up and testing plan to prepare the City, construction manager, and General Contractor for start-up and testing of the facilities.

AECOM/WML Activities: Develop startup, commissioning and testing plans that will demonstrate facility compliance with design parameters developed in Phase 1. These plans shall, at a minimum, consist of:

- O&M Manuals available prior to startup
- Written Standard Operating Procedures (SOP) following the plant standard using the Information Mapping® system
- Classroom training using a PowerPoint presentation for the operators on the SOP documents with a written test
- Field verification and sign off by the Qualified Respondent's Grade V Operator assuring Chief Plant Operator, Plant Operations Supervisors, and Senior Operators competence to field execute the SOP documents
- Classroom training by vendors for operator preventative maintenance and for mechanic/electrical/instrumentation training for preventative, corrective and predictive maintenance
- Classroom training by manufacturer for preventative, corrective and predictive maintenance.

The start-up and testing plan also will serve as a basis for the applicable specification sections, which also will require the General Contractor to submit a Notice to Initiate and Notice of Completion for each testing phase. Therefore, it is important to formulate the start-up and testing plan with requisite activities performed in a logical progression, from the component and sub element level to the integrated system start-up and testing of the Facilities. The plan shall indicate the required duration and sequence of start-up and testing activities, relative to the preparation of O&M manuals, completion of various elements of the training plan, and other activities that are related to the start-up and testing of the Facilities. The plan will include the requirement for a 30-day continuous operations test performed on the total integrated system.

Deliverables:

- Draft Startup and Testing Plan
- Final Startup and Testing Plan

Key Understanding: AECOM/WML will develop startup, commissioning and testing plans that will demonstrate facility compliance with design parameters.

Meetings/Travel: None

Information and Services Provided by Others: City's to provide input on the development of the draft startup and testing plan. City's input and comments based on review of the draft startup and testing plan.

Sub Task 8.9 – Bidding Assistance

Objective: Provide technical assistance during the bidding phase to respond to questions and requests for clarifications from prospective bidders.

AECOM/WML Activities: Conduct a pre-bid conference and during the bidding phase respond in writing to all request for clarification and issue addenda as required. Participate in a job walk with prospective bidders. Prepare plans and specifications, incorporating all addenda in the same format as the bidding documents.

Deliverables: Conformed plans and specifications for bidding:

- Three half size paper copies for City verification prior to final

- One full size set of stamped and signed conformed drawings
- Five half size sets of stamped and signed conformed drawings
- One loose bound set and four bound sets of conformed specifications
- Two CDs containing PDF files of conformed drawings and specifications

Key Understanding: The City will manage and conduct the bidding process and AECOM/WML will provide bidding support including answering inquiries and preparing addenda.

Meetings/Travel: Two AECOM/WML team members, including design manager, will attend the pre-bid conference and job walk.

Information and Services Provided by Others: Advertising the project, receiving contractor questions and requests for clarification, issuing addenda and selection of a contractor.

Task 9 – Second Phase 1 Off-Ramp (Optional)

This task, which includes all engineering services during construction requested in Appendix C of the RFP. The overall intent of this task is to provide technical assistance during construction to allow Facilities completion in accordance with design documents

AECOM/WML will provide engineering services during construction in coordination with the City designated Construction Manager. An on-site AECOM construction resident is not included in the current pricing but will be considered if this optional task is implemented.

Construction management by City designated construction manager, which will be in charge of construction quality control testing, furnishing of fabrication drawings, shop drawings and other construction submittals, processing and approval of contractor payment applications and change orders.

SCADA system integration and programming is not part included in the scope of this task. However, AECOM/WML will review the work of the General Contractor and/or System Integrator in this regard.

This task is broken down into the following sub tasks:

Sub Task 9.1 – Project Management

Objective: Provide additional project management services for coordination activities, project records and documentation, meetings, and day to day communication associated with Phase 1 Off-Ramp services.

AECOM/WML Activities: Prepare an updated schedule of work products, project management plan as necessary and extend project management activities for the duration of the First Phase 1 Off-Ramp.

Deliverables: Invoices and meeting minutes

Key Understanding: The project manager will be responsible for coordination, organization, control, monitoring, and reporting of activities associated with Phase 1 Off-Ramp services.

Information and Services Provided by Others: Construction management will be the responsibility of a City appointed Construction Manager.

Sub Task 9.2 – On-Site Meetings and Observations

Objective: Provide basic on-site engineering support during construction activities

AECOM/WML Activities: Periodically visit the construction site to assist in checking work quality and resolving field issues. Participate in substantial completion inspection and punch-list preparation.

Deliverables: None - documentation of visits (observations, punch lists etc.) to be recorded by the City's on-site construction representatives.

Meetings/Travel: Twice monthly site visits for 48 months by a local AECOM engineer.

Information and Services Provided by Others: None

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Sub Task 9.3 – Submittal Reviews

Objective: Ensure products propose by General Contractor meets the design intent of the contract drawings and specifications.

AECOM/WML Activities: Review General Contractor submittals, including shop drawings and O&M manuals, for conformance with the contract documents.

Deliverables: Written reviews to submittals and resubmittals.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to provide information to review and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.4 – Requests for Information

Objective: Provide technical support to answer requests for information (RFIs).

AECOM/WML Activities: Answer questions, provide written interpretations of the requirements of the contract documents, and evaluate the acceptability of substitute materials and equipment.

Deliverables: Written responses to RFIs.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to route RFIs and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.5 – Design Change Notices and Change Orders

Objective: Provide technical support to modify original design based on new findings or proposed change orders.

AECOM/WML Activities: Prepare Design Change Notices (DCNs - additional details, working drawings and specifications) as necessary. Review potential change orders and advising City as regards validity and value.

Deliverables: DCNs packages and written reviews of potential change orders.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to route RFIs and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.6 – Facilities Start-up and Testing

Objective: Provide technical support during facilities start-up and testing.

AECOM/WML Activities: Assist with facilities start-up and testing in accordance with the start-up and testing plan and addressing operational and performance issues identified during start-up.

Deliverables: Report documenting activities and findings.

Key Understanding: One month of on site assistance by AECOM's operations specialist.

Meetings/Travel: Weekly traveling and expenses for AECOM's operations specialist. Weekly site visits by Design Manager or Process Manager.

Information and Services Provided by Others: None.

Sub Task 9.7 – Training Assistance

Objective: Provide technical support to train staff on how to operate facilities.

AECOM/WML Activities: Provide technical training to plant staff on how to operate facilities per the training plan previously developed.

Deliverables: To be refined based on final training plan requirements (see "key understanding").

Key Understanding: Level of effort will depend on the final training plan requirements. Thus, initially, level of effort is then limited to the budget included in the proposal for this subtask.

Meetings/Travel: To be determined based on final training plan.

Information and Services Provided by Others: None.

Sub Task 9.8 – Operations and Maintenance Manual (O&M)

Objective: Provide a document that describes the operation and maintenance of all the improvements constructed as part of this project.

AECOM/WML Activities: Prepare operations and maintenance manuals based on Standard Operations Procedures (SOPs) and vendor manuals provided by General Contractor.

- Four hardcopies of O&M Manual
- Four CDs containing PDF files O&M Manual

Key Understanding: General Contractor to organized and provide vendor manuals from submittals.

Meetings/Travel: None.

Information and Services Provided by Others: None.

Sub Task 9.9 – Record Drawings

Objective: Document changes to conformed drawings.

AECOM/WML Activities: Produce record drawings with construction-phase documentation provided by General Contractor.

Deliverables:

- Four half size sets design record drawings
- Four sets of record specifications
- Four CDs containing PDF files of record design drawings and specifications

Key Understanding: General Contractor to provide clear and organized markups of all changes to be reflected in the record drawings. Up to 12 months allowed for completion of record drawings after substantial completion acceptance.

Meetings/Travel: None.

Information and Services Provided by Others: None.

Project Schedule

The preliminary schedule for the entire project is provided in Exhibit I. This schedule is built around the project elements described in this scope of work.

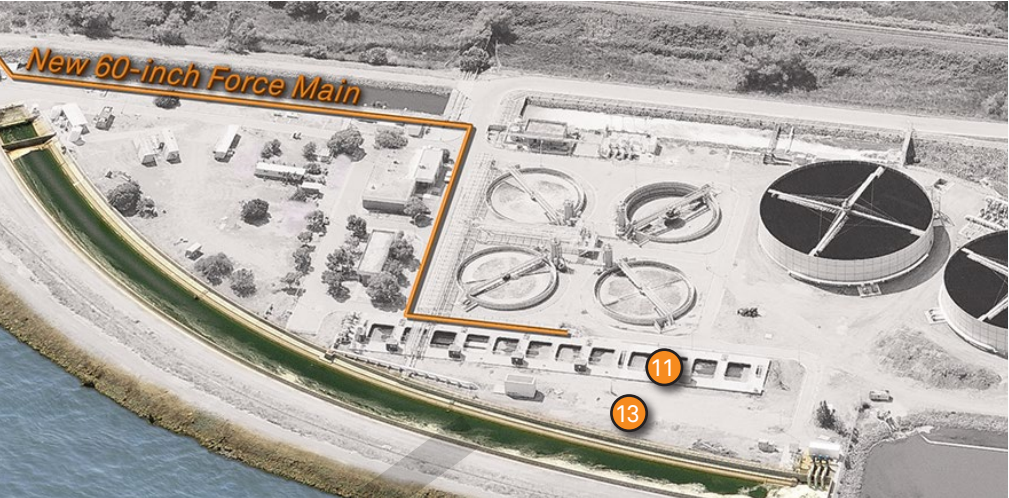
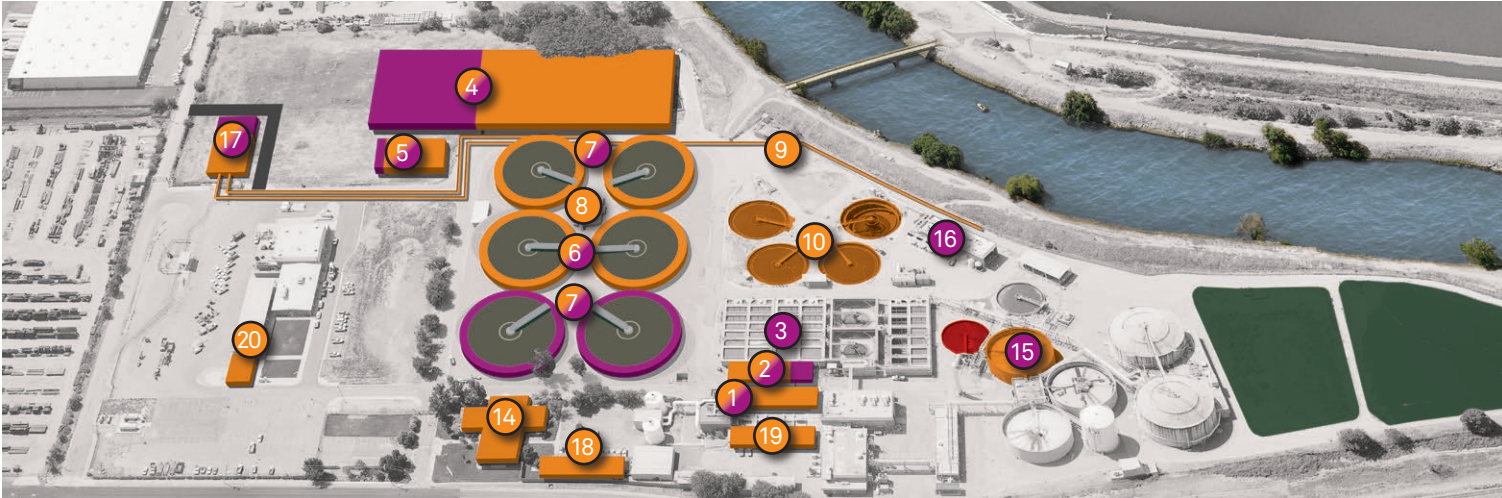
Milestone dates for certain engineering and construction durations are provided below:

Key Milestones	Calendar Days
Phase 1 Duration (from Notice to Proceed to Phase 2 proposal submission)	464
Phase 2 Duration (from Notice to Proceed to substantial completion)	1,554
Phase 1 Off-ramp (from Notice to Proceed to bid of set of plans and specs)	338

Pricing

A pricing breakdown for all Phase 1 tasks is provided in Exhibit C.

Appendix A
Summary of Major Facilities and Construction
Phasing



Summary of Major Facilities and Construction Phasing

- Current Project
- Future (2035) Project

1 New Influent Pump Station

- Structure
- 23 X 55 X 35 foot deep concrete structure
 - 10 foot wide at base of trench

- Major Equipment
- Four 27.5 mgd pumps with 400 Hp motor w/ VFD
 - Pumps are vertical turbine – Fairbanks Morse VTSH type

- Current Project
- Build new station and install all equipment
 - Consider lengthening station to allow for future pump addition

- Future (2035) Project
- Possibly add additional pumps

2 New Fine Screening & Grit Removal

- Structure
- Approx. 25' X 45' fine screening structure (8' deep channel) in concrete & masonry wall building
 - Approx. 44' X 82' grit & flow splitting structure. Concrete to water line and masonry block above.

- Major Equipment
- 2, 46 mgd ¼-inch fine screens with space for a third
 - 2, 46 mgd capacity, conical tray vortex grit units with space for a third
 - Each grit unit 12 foot diameter w/13 trays
 - Two screenings wash presses (3 hp)
 - Four grit pumps (space for two more in the future) 400 gpm ea. 10 hp
 - 2 grit classifiers, 2 hp ea

- Current Project
- Install 2 fine screens, 2 vortex grit units, 2 wash presses, 4 grit pumps & 2 classifiers

- Future (2035) Project
- Install 3rd screen & vortex grit unit

3 Primary Clarifiers

- Structure
- TBD
- Major Equipment
- Future need to repair/modify primary clarifiers #5 & #6
 - Consider replacement of sludge pumps and sludge collection mechanisms

- Current Project
- TBD
- Future (2035) Project
- TBD

4 New Aeration Basins

- Structure
- 6 aeration basins, each with two passes
 - Each basin 560'X45'X20'deep, 3.77 mg ea
 - Three Flow Split structures (PE, 2 SC & 4 SCs)
- Major Equipment
- Anoxic zone mixers (12 @ 20 HP ea.)
 - IMLR pumps, 27 mgd ea. @ 2' TDH, 25 hp

- Current Project
- Build 4 of 6 aeration basins
 - Provide 8 of 12 anoxic mixers & 4 of 6 IMLR pumps
 - Provide all flow split structures

- Future (2035) Project
- Add final 2 aeration basins & clarifiers
 - Add last four anoxic mixers & last 2 IMLR pumps

5 New Blower Building

- Structure
- Slab on grade with pre-engineered canopy
 - Dimensions TBD
- Major Equipment
- 7 units, each at 6,700 scfm capacity @ 10.25 psi
 - 40,000 scfm firm capacity

- Current Project
- Install 6 of 7 blowers
- Future (2035) Project
- Install blower #7

6 New Secondary Clarifiers

- Structure
- 6 - 165' dia. concrete secondary clarifiers
 - 15' sidewater depth
- Major Equipment
- Spiral rake mechanism with sludge & scum rakes
 - Internal scum collection box
 - Peripheral FRP weirs and launder covers

- Current Project
- Build 4 of 6 secondary clarifiers
- Future (2035) Project
- Add final 2 clarifiers

7 New RAS Pump stations

- Structure
- Three stations (one per clarifier pair)
 - 30 x 50 slab on grade
- Major Equipment
- 1 – 9.0 mgd pump per clarifier (common spare per pair) w/50 Hp motor
 - 44 mgd design capacity (80% of MM flow w/ one unit OOS)

- Current Project
- Build 2 of 3 RAS/WAS stations
- Future (2035) Project
- Add final RAS/WAS pump station

8 Secondary Effluent Pump Station (former Biotower PS)

- Structure
- Allow for minor structural modifications to existing structure
- Major Equipment
- 4 existing pumps, 26 mgd @ 55' TDH, 350 HP ea
 - Modifications for new service TBD

- Current Project
- Construct all modifications
- Future (2035) Project
- No changes

9 Bypass Pump Station (former Secondary Effluent station No. 2)

- Structure
- No changes
- Major Equipment
- 3 existing pumps 34.6 mgd @ 15' TDH, 100 HP motor
 - Hydraulic capacity to be checked due to smaller FM but modifications should be unnecessary

- Current Project
- Construct all modifications
- Future (2035) Project
- No changes

10 New Main Plant Area Flow EQ (former secondary clarifiers

- Structure
- No changes
- Major Equipment
- Demolish & remove existing clarifier mechanisms & scum tanks
 - Retain existing sludge pumps for EQ water return

- Current Project
- Construct all modifications
- Future (2035) Project
- No changes

11 Renovate Existing Filters

- Structure
- Concrete work TBD
- Major Equipment
- TBD

- Current Project
- Perform renovation
- Future (2035) Project
- No new work

13 Chlorine Based Disinfection

- Structure
- Allow for minor structural modifications
- Major Equipment
- None
- Current Project
- Construct any modifications

- Future (2035) Project
- No changes

14 Admin/Engineering/ Safety Building

- Structure
- Modify exsiting structure to facilitate the removal of the laboratory functions and the addition of engineering / safety functions
- Major Equipment
- Not applicable
- Current Project
- move laboratory staff to new building
 - relocate engineering staff to existing admin building
 - relocate safety staff to existing admin building
 - building to be enlarged as necessary

- Future (2035) Project
- No changes

15 Gravity Thickener No. 1

- Structure
- Demolish
- Major Equipment
- Demolish
- Current Project
- No new work

- Future (2035) Project
- Add second gravity thickener for primary sludge thickening

16 Existing Dewatering Building

- Structure
- No changes
- Major Equipment
- No changes
- Current Project
- No changes
- Future (2035) Project
- Demo once screw press dewatering facility is expanded

17 New Dewatering Building

- Structure
- Two story roofed structure with open sides
 - Drive-thru sludge truck loading
- Major Equipment
- Floc Tanks, 6 total, 1.5 HP each
 - Screw presses, 6 total, 7.5 HP each
 - Liquid polymer makeup and feed system for each sludge press
 - Conveyors for truck loading

- Current Project
- Construct new building & install four sludge presses & polymer systems

- Future (2035) Project
- Add 2 more sludge presses & polymer systems

18 New Laboratory

- Structure
- New building matching existing Administration building
- Major Equipment
- None

- Current Project
- New Laboratory building to be constructed where the temporary Engineering building now sits. The Environmental group will be relocated to the new Laboratory building

- Future (2035) Project
- No new work

19 Operations Building

- Structure
- No new building
- Major Equipment
- None

- Current Project
- Expand the Operations group into the portion now housing the Environmental group

- Future (2035) Project
- No new work

20 Maintenance / Collections Building

- Structure
- Construct an addition to existing building to house additional office and meeting space to spare
- Major Equipment
- None

- Current Project
- As above

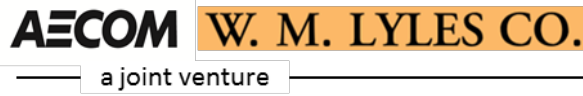
- Future (2035) Project
- None

Exhibit D - Phase 1 Cost
City of Stockton Municipal Utilities Department
Progressive Design–Build Services
Regional Wastewater Control Facilities Project
July 25, 2016

Task No.	Task Description	PIC/ CSM	Project Manager	Design Manager	Process Manager	Project Engineer	ENG II	ENG I	CM II	EST	SCH	OM	PER	PROC	QA	AE	CAD	ADM	AECOM Labor Hours	AECOM Labor Cost	AECOM Expenses	Subs Expenses	TOTAL COST
	Average Hourly Rates	\$313.3	\$293.3	\$241.0	\$304.7	\$145.2	\$149.5	\$99.7	\$213.6	\$170.9	\$170.9	\$199.3	\$142.4	\$170.9	\$270.5	\$145.2	\$119.6	\$85.4					
1	PROJECT MANAGEMENT																						
1.1	Schedule of Work Products	2	4	4	4	8	0	8	0	0	8	0	0	0	0	0	0	4	42	\$ 7,650	\$ 383	\$ -	\$ 8,033
1.2	Project Management Plan	16	16	16	0	16	0	16	16	0	0	0	0	0	0	0	4	6	106	\$ 21,887	\$ 1,094	\$ -	\$ 22,981
1.3	Progress Review Meetings	28	182	182	182	365	0	0	0	0	0	0	0	0	0	0	0	30	970	\$ 217,242	\$ 13,000	\$ -	\$ 230,242
1.4	Schedule updates	4	14	14	0	28	0	0	0	0	28	0	0	0	0	0	0	0	88	\$ 17,646	\$ 882	\$ -	\$ 18,529
1.5	Monthly Payment Requests and Progress Reports	6	28	0	0	56	0	0	16	0	0	0	0	0	0	0	0	28	134	\$ 24,160	\$ 1,208	\$ -	\$ 25,368
1.6	QA/QC Program	5	4	40	0	0	0	40	0	0	0	0	0	0	8	0	0	8	105	\$ 19,213	\$ 900	\$ -	\$ 20,113
1.7	Coordination	4	16	16	0	0	0	0	16	0	0	0	0	0	0	0	0	40	92	\$ 16,761	\$ 833	\$ -	\$ 17,594
1.8	Document Management System (DMS)	7	8	24	0	40	0	16	0	0	0	0	0	0	0	0	0	60	155	\$ 22,978	\$ 1,149	\$ -	\$ 24,127
1.9	Risk Management	16	40	40	40	80	0	0	40	40	40	0	16	0	0	0	0	40	392	\$ 78,097	\$ 7,000	\$ -	\$ 85,097
	PROJECT MANAGEMENT	89	312	336	226	593	0	80	88	40	76	0	16	0	8	0	4	216	2,085	\$ 425,635	\$ 26,449	\$ -	\$ 452,084
2	INITIAL SITE VISIT AND DATA COLLECTION																						
2.1	Issue Baseline 10 Percent Design Package	0	8	16	40	8	24	40	16	24	8	0	0	0	0	0	40	40	264	\$ 44,213	\$ 2,500	\$ -	\$ 46,713
2.2	Flow and Loads and Existing RWCF Performance Review	0	4	16	48	40	40	80	0	0	0	0	0	0	8	0	0	16	252	\$ 42,949	\$ 2,500	\$ 40,000	\$ 85,449
2.3	Initial Site Visit and Data Collection	0	32	60	80	80	0	80	40	40	0	40	0	0	0	288	0	24	764	\$ 135,041	\$ 22,800	\$ 21,000	\$ 178,841
	INITIAL SITE VISIT AND DATA COLLECTION	0	44	92	168	128	64	200	56	64	8	40	0	0	8	288	40	80	1,280	\$ 222,202	\$ 27,800	\$ 61,000	\$ 311,002
3	PHASE 1 DESIGN WORKSHOPS AND FIELD INVESTIGATIONS																						
3.1	Main Process Workshops (Three Total)	0	40	60	100	80	40	40	40	24	0	32	0	0	0	0	40	24	520	\$ 104,103	\$ 16,800	\$ -	\$ 120,903
3.2	Other Process Workshops (Three Total)	0	40	60	80	60	40	80	40	24	0	32	0	0	0	0	24	24	504	\$ 97,178	\$ 9,800	\$ -	\$ 106,978
3.3	Personnel Facilities and Architectural Programming	0	24	24	0	24	0	40	40	24	0	32	0	0	0	120	60	8	396	\$ 64,605	\$ 12,400	\$ -	\$ 77,005
3.4	Site and Roadway Layout Workshop	0	24	40	24	24	0	0	0	0	0	0	0	0	0	80	40	8	240	\$ 44,563	\$ 12,400	\$ -	\$ 56,963
3.5	Electrical and Instrumentation Workshop	0	24	24	24	0	0	24	8	8	0	0	0	0	0	80	24	8	224	\$ 40,776	\$ 12,400	\$ -	\$ 53,176
3.6	10 Percent Design Summary and Cost Estimate	0	16	40	60	80	0	80	0	80	40	0	0	0	16	0	40	24	476	\$ 83,872	\$ 15,000	\$ -	\$ 98,872
3.7	Subsurface Investigations	0	0	8	0	0	40	0	0	0	0	0	0	0	8	0	0	0	56	\$ 10,072	\$ 504	\$ 238,625	\$ 249,201
3.8	Surveying and Utility Location	0	0	8	0	0	0	40	0	0	0	0	0	0	4	0	0	0	52	\$ 6,997	\$ 350	\$ 51,750	\$ 59,096
3.9	Hydraulic Profile Modeling	0	8	16	32	0	60	40	0	0	0	0	0	0	12	0	24	0	192	\$ 35,026	\$ 1,751	\$ -	\$ 36,778
3.10	Site Visits	0	40	40	40	0	0	0	0	0	0	0	0	0	0	0	0	8	128	\$ 34,243	\$ 6,200	\$ -	\$ 40,443
	PHASE 1 DESIGN WORKSHOPS AND FIELD INVESTIGATIONS	0	216	320	360	268	180	344	128	160	40	96	0	0	40	280	252	104	2,788	\$ 521,436	\$ 87,605	\$ 290,375	\$ 899,415

Task No.	Task Description	PIC/ CSM	Project Manager	Design Manager	Process Manager	Project Engineer	ENG II	ENG I	CM II	EST	SCH	OM	PER	PROC	QA	AE	CAD	ADM	AECOM Labor Hours	AECOM Labor Cost	AECOM Expenses	Subs Expenses	TOTAL COST
	Average Hourly Rates	\$313.3	\$293.3	\$241.0	\$304.7	\$145.2	\$149.5	\$99.7	\$213.6	\$170.9	\$170.9	\$199.3	\$142.4	\$170.9	\$270.5	\$145.2	\$119.6	\$85.4					
4	25 PERCENT DESIGN PACKAGE																						
4.1	Draft Basis of Design Report	0	120	200	240	320	320	320	80	40	24	40	0	0	104	2,713	3,100	160	7,781	\$ 1,125,240	\$ 5,016	\$ -	\$ 1,130,256
4.2	VE/Constructability Review	0	40	80	40	90	0	0	0	40	0	0	0	0	80	0	0	24	394	\$ 86,796	\$ 12,400	\$ -	\$ 99,196
	25 PERCENT DESIGN PACKAGE	0	160	280	280	410	320	320	80	80	24	40	0	0	184	2,713	3,100	184	8,175	\$ 1,212,036	\$ 17,416	\$ -	\$ 1,229,452
5	50 PERCENT DESIGN PACKAGE																						
5.1	Final Basis of Design Report	0	120	200	240	240	416	780	40	80	60	40	0	0	52	0	0	40	2,308	\$ 389,233	\$ 12,400	\$ -	\$ 401,633
5.2	50 Percent Design Packages	0	80	160	80	160	0	360	40	0	0	0	0	0	160	2,713	3,100	160	7,013	\$ 975,722	\$ 5,000	\$ -	\$ 980,722
	50 PERCENT DESIGN PACKAGE	0	200	360	320	400	416	1,140	80	80	60	40	0	0	212	2,713	3,100	200	9,321	\$ 1,364,956	\$ 17,400	\$ -	\$ 1,382,356
6	PERMITTING																						
6.1	Permitting Support	0	16	24	8	24	0	80	0	0	0	0	320	0	0	0	0	8	480	\$ 70,619	\$ 3,531	\$ -	\$ 74,150
	PERMITTING	0	16	24	8	24	0	80	0	0	0	0	320	0	0	0	0	8	480	\$ 70,619	\$ 3,531	\$ -	\$ 74,150
7	PHASE 2 PROPOSAL AND DESIGN-BUILD PRICE DEVELOPMENT																						
7.1	60 Percent Design Packages	0	40	80	16	80	0	0	80	0	0	0	0	0	240	1,085	1,240	160	3,021	\$ 449,071	\$ 15,000	\$ -	\$ 464,071
7.2	Guaranteed Maximum Price	40	80	40	0	40	0	80	320	480	60	0	0	480	40	0	0	0	1,660	\$ 312,861	\$ 6,000	\$ -	\$ 318,861
7.3	Phase 2 Proposal	80	80	80	80	40	0	40	320	0	0	0	0	0	40	0	0	160	920	\$ 194,809	\$ 22,800	\$ -	\$ 217,609
	PHASE 2 PROPOSAL AND DESIGN-BUILD PRICE DEVELOPMENT	120	200	200	96	160	0	120	720	480	60	0	0	480	320	1,085	1,240	320	5,601	\$ 956,740	\$ 43,800	\$ -	\$ 1,000,540
COLUMN TOTALS		209	1,148	1,612	1,458	1,983	980	2,284	1,152	904	268	216	336	480	772	7,078	7,736	1,112	29,729	\$4,773,624	\$224,001	\$351,375	\$5,349,000

Notes: This price breakdown is provided for reference only and does not present the cost to perform individual items of work separately.



Submitted to
City of Stockton
Municipal Utilities Department

EXHIBIT E

Phase 2B Final Design and Engineering Services During Construction and Construction Management Services Scope of Work

City of Stockton Municipal Utilities Department
Progressive Design Build Services
Regional Wastewater Control Facility Modifications Project

January 25, 2019

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Acronyms

AECOM/WML	AECOM/W. M. LYLES JOINT VENTURE
BDR	Basis of Design Report
BNR	biological nitrogen removal
CCC	Chlorine Contact Canal
CIEMP	Capital Improvement and Energy Management Plan
CMMS	computerized maintenance management system
ESDC	Engineering Services during Construction
hp	horsepower
HVAC	Heating, Ventilation, and Air Conditioning
O&M	Operations and Maintenance
Project	Regional Wastewater Control Facility Modifications Project
RFIs	requests for information
RWCF	Regional Wastewater Control Facility
SCADA	Supervisory Controls and Data Acquisition
VFD's	variable-frequency drives

Introduction

As requested by the City of Stockton (City), AECOM/W. M. LYLES JOINT VENTURE (AECOM/WML) has developed a scope of services for the final engineering and construction management services required in Phase 2B for the progressive design-build services for the Regional Wastewater Control Facility Modifications Project (Project). Phase 2B includes final design, engineering services during construction, construction, commissioning and testing, and training.

Background

The City owns and operates the Regional Wastewater Control Facility (RWCF), which provides sewerage service for the City of Stockton, Port of Stockton, and surrounding unincorporated areas of San Joaquin County. The RWCF is located at 2500 Navy Drive in Stockton, with facilities situated on both the eastern and western banks of the San Joaquin River.

The existing RWCF includes the following four treatment areas: Main Plant, facultative ponds, engineered wetlands, and the Tertiary Plant. The Main Plant includes all the treatment facilities on the eastern bank of the river. The Tertiary Plant includes all the treatment facilities on the western bank of the river. The plants are connected by a bridge over the River.

The Main Plant receives wastewater flows from the surrounding communities and provides screening, grit removal, raw sewage pumping, primary sedimentation with chemical addition, secondary treatment with biotowers, secondary clarification, and secondary effluent pumping.

Additional secondary treatment and storage can be provided using the facultative ponds. Secondary and tertiary treatment is also available in the adjacent engineered wetlands. The use of the ponds and wetlands for treatment or diversion past the ponds and wetlands are optional flow paths dependent on a variety of operational factors. Effluent from the ponds, wetlands, or diversion structures (as applicable) is then routed to the Tertiary Plant.

The Tertiary Plant provides ammonia removal using nitrifying biotowers, dissolved air flotation with chemical addition, dual media tertiary filtration, disinfection by chlorination using a disinfection channel (CCC), and dechlorination prior to discharge to the San Joaquin River via a siphon to a submerged open pipe outfall.

The Main Plant also provides solids handling for the solids generated by the primary and secondary sedimentation processes. Solids are either routed to gravity thickeners, gravity belt thickeners or pumped to the anaerobic digesters directly. After anaerobic digestion, sludge is pumped to a holding tank. Digested solids are removed from the lagoons by a dredge or pumped directly to holding tanks where they are further conditioned and dewatered using belt filter presses. Dewatered solids are hauled off-site by a private contractor and routinely recycled on agricultural lands as a source of nutrients and soil amendment. In an emergency, solids can be used as daily cover for solid waste at the landfill.

Many of the facilities of the existing RWCF include dated technologies and have aging equipment and infrastructure, which will not be able to accommodate future treatment demands and meet regulatory requirements. Because of this, the City has embarked in a program to significantly upgrade the RWCF. These upgrades will be implemented to specifically address the following issues:

1. More Stringent Regulatory Limits. The RWCF must meet new nitrate and nitrite nitrogen discharge limits by June 1, 2024. A biological nitrogen removal (BNR) process needs to be incorporated into the treatment train.
2. Need for Increased Capacity. The CIEMP forecasts a 60 percent increase in influent flow and loadings by 2035.
3. Aging Infrastructure/Outdated Technologies. Most of the unit processes in the plant range in age from 40 to 70 years, and in some cases are well past their useful operational life or rely on outdated technologies. Rehabilitation or replacement is necessary to ensure an efficient, reliable, and safe operation.

4. **Need for Better Control Systems.** Control rooms are scattered around the facility and SCADA monitoring is incomplete, making operations less efficient. A centralized control/operations center with a comprehensive Supervisory Controls and Data Acquisition (SCADA) system is needed to make plant operations more efficient.
5. **Personnel and Stores Facilities.** The treatment plant has grown in size, complexity and age over the years and this has resulted in increases in the City operations, maintenance and engineering staff as well as additional storage needs. However, personnel facilities including laboratory space, offices, locker rooms, and the like, have not kept pace. Also, the current Stores Building needs to be relocated to the Main Plant for safety reasons due to recent lane expansions in Navy Drive. Thus, new modern facilities are needed to accommodate these functions.

Project Objective

The goal of the RWCF Modifications Project (formerly known as Progressive Design-Build Project) is to plan, design and construct wastewater treatment plant facilities that are able to meet current regulatory treatment objectives and balance future potential regulatory requirements for most conditions in a cost-effective manner while extending the life of existing assets within the budget available.

Project Description

The type and extent of the improvements included in the Project have been detailed in the AECOM/WML Phase 2 Proposal, Final Basis of Design Report (BDR), 60 percent drawings, equipment specifications, and associated appendices submitted as final deliverables for Phase 1.

Progressive Design Build Approach Implementation

The City is implementing the project on a progressive design-build basis. This approach involves bringing design and construction resources together in an integrated team to manage the project in a competitive manner but with a single-source responsibility and accountability. This approach is broken down into two distinct phases:

Phase 1 Services – Planning, Design Development, Permitting and Preparation of the Design Build Price.

This phase included all the planning, engineering, and permitting to prepare a BDR and sufficient plans, specifications and other supporting documents to develop a Design-Build price and schedule for Phase 2.

Phase 1 was completed in January 2019.

Phase 2 Services – Project Execution. Upon agreement on the design-build price for the project, negotiations, preparation of appropriate agreements, approval by City Council, and the release of required approvals, AECOM/WML will proceed with Phase 2, in which final design details will be completed, and equipment and material procurement, construction, engineering design support during construction, construction management, start-up, and acceptance testing will be carried out.

To expedite the execution of this project, the city has decided to split Phase 2 into the following Phases:

Phase 2A – 90 Percent Design (Scope included in “Exhibit N – Phase 2A - Engineering and Design Services”)

This phase includes all the activities required to further develop the project design for construction of the facilities included in this project to a 90 percent design level. This phase encompasses project management activities, construction plans (e.g., quality management and safety program plans), additional field investigations, permitting, calculations, drawings, and specifications.

Phase 2B – Final Design and Engineering Services during Construction (Scope included in “Exhibit E (Revised) – Phase 2B - Final Design and Engineering Services during Construction (ESDC) Scope of Services”)

This phase includes completing the final design for this project (final design) as well as all engineering services during construction (post-design).

Phase 2B – Construction Management Services (Scope included in “Exhibit E (Revised) – Phase 2B - Final Design and ESDC Scope of Services”)

This phase includes all construction management and field engineering services (safety, quality control) necessary to build the project and provide the necessary training, and startup and testing for final acceptance.

Phase 2B – Final Design and Engineering Services during Construction

For the final phase of this project, Phase 2B, AECOM/WML will provide engineering services during construction. A detailed description of these services is provided under Task 6. [Note: Tasks 1 through 5 are presented in Phase 2A Scope.]

Task 6 – Final Design

Objective: Based on comments from the City review of the 90 percent design submittal, prepare the final design documents (Issued for Construction - IFC).

AECOM/WML Activities: Based on City review comments from the 90 percent submittal, prepare and issue IFC documents.

IFC documents will be stamped by a professional engineer(s) licensed in the State of California.

Deliverables:

- IFC drawings and specifications
 - One full size set of stamped and signed final design drawings
 - Five half size sets of stamped and signed final design drawings
 - One loose bound set and four bound sets of specifications
 - One memory stick containing PDF files of drawings and specifications

Key Understanding: AECOM/WML will prepare IFC documents ready for printing and distribution. No additional schedules or construction costs are provided at this stage of the design because Phase 2B is anticipated to be authorized by then. Thus, guaranteed maximum priced will be fixed and cost reporting and schedule updates will be included with each monthly report with each invoice.

Meetings/Travel: One full- day meeting to review changes to the IFC documents.

Information and Services Provided by Others: City’s comments on 90 percent design submittal review provided in Phase 2A.

Task 7 – Project Database and CMMS for Final Design

Objective: Provide new equipment information for the City’s computerized maintenance management system (CMMS).

AECOM/WML Activities: Prepare a Preventative Maintenance Task Sheet for each new equipment item installed as part of this project using Microsoft Excel.

Prepare an asset management data sheet with information describing all new equipment installed as part of this project using Microsoft Excel. Information will be included in tabular form in a format that the City currently uses for data input. An example of the data input forms is provided in Appendix A.

Deliverables: Preventative Maintenance Task sheets and Asset Management Data Sheet in Microsoft Excel format submitted electronically.

Key Understanding:

- a. Only new equipment installed as part of this project is included.
- b. Valve information to be provided for motorized valves 8-inch and larger.
- c. Process mechanical equipment information to be provided for major mechanical equipment listed on the mechanical equipment schedules on the final design drawings.
- d. Electrical equipment information to be provided for major electrical gear, variable-frequency drives (VFD’s), and for process mechanical equipment motors 5 horsepower (hp) and larger.
- e. Heating, Ventilation, and Air Conditioning (HVAC) & Plumbing equipment information not part of the required CMMS data.
- f. Instrument data/information will be provided for field instruments included in the field instrument list in the final design package. Information on individual instruments included as part of vendor package equipment or systems will be available as part of the vendor Operations and Maintenance (O&M) manuals and not repeated in CMMS.
- g. City to provide all estimates of “Expected life” and “Unit Life”.
- h. Estimates of “replacement cost” shall be provided for items exceeding \$10,000 and shall be for capital cost only (i.e., no installation).

City has asked AECOM to include an allowance of \$20,000 to be able to augment the scope of this task in addition to the above listed data content as needed or desired.

Meetings/Travel: None.

Task 8 – Engineering Services during Construction

The purpose of this task is to provide engineering support during construction to help ensure construction is executed in accordance with the overall intent of the IFC documents.

AECOM/WML will provide these services in coordination with the City’s designated representative. This task includes AECOM/WML on-site engineering presence to provide timely support to construction activities.

This task is broken down into the following sub tasks:

Sub Task 8.1 – Resident Engineering

Objective: Provide resident engineering support during construction activities.

AECOM/WML Activities: Full time resident engineering staff will be located at the construction site to assist in checking work quality and resolving field issues that require engineering input and approval. Participate in substantial completion inspection and punch-list preparation.

Deliverables: Documentation (copies of observations, punch lists, etc.) to be posted on the project's SharePoint Site.

Meetings/Travel: Staff will be assigned to the construction site.

Information and Services Provided by Others: None.

Key Understanding:

- AECOM will assign a California registered professional engineer on site to provide engineering support during construction and serve, together with the other resident engineer, as an on-site link to the rest of the engineering team.
- Resident engineering representatives will be the primary conduit for coordination with the design team and will have the authority to review, resolve, and approve deviations from, or discrepancies in, design documentation and/or construction techniques.

Sub Task 8.2 – Submittal Reviews

Objective: Review products proposed by vendors and subcontractors for compliance with the design intent of the IFC drawings and specifications or subsequent updates.

AECOM/WML Activities: Review vendor and subcontractor submittals, including shop drawings and O&M manuals, for conformance with the contract documents.

Deliverables: Shop drawings and submittals to be posted to the project SharePoint Site

Key Understanding: AECOM/WML will review and approve shop submittals. For submittals where City preferences are clearly applicable, (e.g., color selection), AECOM/WML will query the City Representative. In addition, it is understood that the City will independently monitor shop drawing approval process and make its preferences known to AECOM/WML.

Meetings/Travel: None

Information and Services Provided by Others: Shop drawings and submittals to be provided by vendors and subcontractors. City to determine in advance, if possible, its preferences and need for involvement in the shop drawing approval process.

Sub Task 8.3 – Requests for Information and Requests for Clarification

Objective: Provide technical support to answer requests for information (RFIs) and requests for clarification (RFCs) and field modifications of original design.

AECOM/WML Activities: Answer questions, provide written interpretations of the requirements of the contract and final design documents, and evaluate the acceptability of substitute materials and equipment. Provide technical support for minor modifications to original design based on new findings. The construction management team will maintain separate excel databases for RFI and RFC tracking.

Deliverables: Written responses to RFIs and RFCs.

Key Understanding: This sub task does not include addressing significant deviations to the design or engineering work to process change orders. Engineering staff will respond to RFCs and RFIs as appropriate but the overall information management process will be led by the construction management team.

Meetings/Travel: None.

Information and Services Provided by Others: Construction manager to administer the RFI and RFC document workflow between vendors, subcontractors, engineering staff, construction staff, and the City.

Sub Task 8.4 – Operations Manual (OM) and Maintenance Manual (MM)

Objective: Provide documents that describe the operation and maintenance of all the process and treatment improvements constructed as part of this project.

AECOM/WML Activities:

Operations Manual:

AECOM/WML will provide an Operations Manual for all new unit processes and treatment systems included in this project.

The Operations Manual will provide technical guidance in the operation and management of the treatment processes and equipment at the RWCF, not a detailed standard operational procedure for plant component. The Operations Manual is intended for use by plant operators as the primary reference for the control, standard operation, emergency operation, start-up, shutdown, and alarm troubleshooting of the treatment processes and their related equipment. The manual is not intended to provide standard operation procedures but instead to provide appropriate information on how the process was designed to operate plus recommendations for process control and troubleshooting. The Operations Manual is also intended for the use of administrative personnel both as a reference and as an instructional document in staff training.

Please refer to Appendix B for a preliminary outline.

Maintenance Manual:

AECOM/WML will provide a Maintenance Manual covering the equipment and appurtenances for the major unit processes and treatment systems installed by AECOM/WML at the RWCF.

The Maintenance Manual will provide technical guidance for maintaining treatment process equipment in consistent working order. The Maintenance Manual is intended to be used by the plant maintenance staff as the general reference for preventive maintenance, problem diagnosis and corrective maintenance of treatment process equipment. Detailed maintenance for specific equipment is provided in vendor manuals. The Maintenance Manual is also intended for the use of administrative personnel as a reference and as an instructional document in staff training. The Maintenance Manual will be specific to the new processes at the RWCF but it is intended to be used in coordination with the vendor manuals.

Please refer to Appendix B for a Preliminary Outline.

Vendor Manuals:

Vendor Manuals: Provide vendor equipment O&M manuals as required by the project specifications.

Deliverables:

- Four hardcopies of vendor O&M Manuals

- Four hardcopies of Draft and Final Operations Manual and Maintenance Manual
- Four memory sticks containing PDF files of the vendor manuals and O&M Manuals

Key Understanding: Preparation of Operations Manual and Maintenance Manual documentation is limited to wastewater treatment processes built by AECOM/WML. For reference purposes, the proposed scope of the OM&MM to be prepared will be similar to what AECOM/WML prepared for other Central Valley clients, specifically the City of Davis, CA.

Meetings/Travel: None.

Information and Services Provided by Others: City to review O&M manuals. Vendor O&M manuals provided by vendors.

Sub Task 8.5 – Training Outline

Objective: Develop a training summary consisting of a detailed outline of training activities and preliminary schedule that adequately prepares designated City staff to operate and maintain the facilities.

AECOM/WML Activities: In preparation for the facilities startup and acceptance test, AECOM/WML will develop a training plan for the City designated and licensed O&M workforce to explain the facilities design intent, the OM&MM, vendor O&M manuals and the equipment manufacturers' recommendations. AECOM/WML will consult with City to determine training requirements, and develop an equipment specific outline and preliminary schedule that prepares designated staff to operate and maintain the new facilities. The training outline is intended for two purposes: 1) to better focus subcontractors and equipment manufacturer training requirements and 2) to guide the City operations and maintenance staff in preparing for training classes in coordination with facilities start-up.

The training outline will encompass overall plant process training as well as provide vendor specific outlines of training topics and procedures for major process equipment. . The training plan will document planned training methods (classroom, field and hands-on), and a schedule in coordination with the new treatment facilities construction and start-up schedule. The training plan also will identify the responsible party and the supporting parties for each element of the training program.

Deliverables:

- First draft training outline, 120 days prior to startup and testing.
- Final training outline, 90 days prior to startup and testing.

Key Understanding: AECOM/WML will prepare a training outline and schedule developed to prepare designated staff to operate and maintain the new facilities.

Meetings/Travel: None

Information and Services Provided by Others: City's input on training requirements and development of the draft training plan. City's input and comments from review of the draft training plan.

Sub Task 8.6 – Start-up, Testing, and Commissioning Plan

Objective: Develop a start-up and testing plan for all new and modified treatment facilities.

AECOM/WML Activities: Develop a startup, testing, and commissioning plan that will properly manage the startup and initial operation and testing of each unit process including all systems and sub-systems from equipment to instrumentation and controls to demonstrate that the new facilities are ready for operation. Later

during acceptance testing, demonstrate facility compliance with design parameters developed in Phase 1. The plan shall, consist of:

- Pre-Operational Checks
- Equipment Testing including control system and loop testing
- System startup sequence
- System testing
- Manufacturer's Certification
- Operation Manual and Maintenance Manual available prior to startup (bound individually and separately from the Testing Plan)
- Acceptance Testing Plan (Based on Acceptance Testing Plan Outline provided in Appendix C)

The Start-up, Testing, and Commissioning Plan also will indicate the anticipated duration and sequence of start-up and testing activities.

Deliverables:

- Draft Startup and Testing Plan, 120 days before startup and testing
- Final Startup and Testing Plan, 60 days before startup and testing.

Key Understanding: Assistance that will be provided by the City to AECOM/WML and its subcontractors during startup and testing of the facilities will be as described in the Acceptance Testing Plan Outline

Meetings/Travel: None

Information and Services Provided by Others: City to provide input on the development of the draft startup and testing plan.

Sub Task 8.7 – Training

Objective: Provide technical support to train staff on how to operate the new treatment facilities included in this project per the training plan previously developed.

AECOM/WML Activities: In addition to the vendor training, AECOM/WML will complete a classroom and hands-on field training program for the plant and pertinent City staff. The classroom session will utilize the Operations Manual and Maintenance Manual and other training materials provided by AECOM/WML, such as, vendor manuals, handouts and slide presentations. The following training topics will be covered:

- Vendor Equipment Training. Training for plant operations, maintenance, and repair personnel will occur in conjunction with the pre-operational and the equipment testing. The equipment manufacturers will provide training on the operation and maintenance of individual pieces of equipment. Training is to include classroom instruction and hands-on instruction in the field as applicable. Training will generally cover the following topics:
 - Familiarization – provide an overview of the equipment and its various parts and what documentation associated with the equipment is available
 - Safety – provide safety information and precautions

- Operation – provide overview of the various modes of operation and provide instructions on proper use of the equipment
- Preventative Maintenance – provide procedures to properly maintain equipment including work to be performed daily, weekly, monthly, quarterly, semi-annually, and annually.
- Corrective Maintenance – provide information on potential problems and the approach for repair procedures to remedy those problems
- Parts – provide spare parts list and ordering information
- Local Representatives – provide contact information for manufacturer's representatives and information on servicing and emergency assistance.
- Operation and Maintenance Manuals – provide a review of available operation and maintenance documentation
- Process Training, including: Overviews of how the treatment processes work, details on how the facility is controlled and monitored to ensure reliable operations, reaction to process irregularities, and steps for addressing upsets of the biological systems.
- Electrical Equipment Training, including: Operations, maintenance and safety training for new major electrical equipment, such as the electrical switch gear, generators, automatic transfer switches, transformers, power monitors and MCC's.
- Control Systems and SCADA Training, including: Theory of the new control system, review of control screens, hands on training with the hardware, and calibrating and maintaining instruments such as flow meters, analyzers and critical reporting instruments. Between 80% and 100% of this training will be hands-on, in the field training. AECOM/WML will provide City staff the opportunity to develop the SCADA screens collaboratively with the SCADA designer. This effort is included in the scope. Additionally, AECOM/WML will provide training on the final Process Control Narratives for City staff to understand the control approach.

The total number of training hours will also generally be broken down, but not necessarily limited to:

- Vendor Training: There are 27 major equipment packages. Assuming 2 hours of training on average for each major equipment package, approximately 60 hours of vendor training are anticipated.
- Process Training: A classroom session of 4 hours will be held to address the design intent. A second session of 8 hours will present the Operations Manual and Maintenance Manual
- Electrical Equipment Training: 16 hours
- Control Systems and SCADA Training: 80 hours

Deliverables: Vendor training sessions for each major equipment package, process and O&M manual classroom training, plus electrical equipment training and Control system and SCADA training session.

Key Understanding: A budget has been established based on hours included in this scope of work plus preparation of the training materials and expenses, which will cap the level of effort for this subtask. Additional training can be provided at additional cost.

Meetings/Travel: To be determined based on final training plan.

Information and Services Provided by Others: Vendor training provided by vendors.

Sub Task 8.8 – Facilities Start-up, Testing, and Commissioning

Objective: Provide technical support during facilities start-up and testing. Note that the onsite CM team will be implementing the details of the final startup and commissioning plan.

AECOM/WML Activities: Manage and lead with facilities startup and testing in accordance with the Start-up and Testing plan and addressing operational and performance issues identified during start-up.

Deliverables: Documentation of startup activities and copies of completed vendor startup and testing checkout forms will be performed by CM team.

Key Understanding: Approximately three months of on-site assistance, during the day-time operating shift by AECOM's operations/start-up specialist is included. The City staff will be responsible for operating and maintaining the facilities during the equipment startup activities, acceptance testing, and thereafter. No operations or maintenance labor is being provided by AECOM/WML. Outside laboratory costs or sampler rental or any other costs associated with performance testing are included in the construction cost for this project

Meetings/Travel: Daily traveling and expenses for AECOM's operations specialist and engineering staff. Weekly site visits by Design Manager or designee.

Information and Services Provided by Others: None.

Sub Task 8.9 – Record Drawings

Objective: Document changes to final design drawings in accordance with specification Section 01300.

AECOM/WML Activities: Produce record drawings with construction-phase documentation provided by Construction Manager, and subcontractors.

Deliverables:

- Four half size sets design record drawings
- Four memory sticks containing PDF files of record design drawings

Key Understanding: AECOM/WML field staff to provide clear and organized markups of all changes to be reflected in the record drawings. Record drawings to be a requirement for Final Completion, not Substantial Completion. All record drawings shall be stamped by a California Registered Professional Engineer in accordance with applicable guidelines and regulations.

Meetings/Travel: None.

Information and Services Provided by Others: None.

Phase 2B – Construction Management Services

For the final phase of this project, Phase 2B, AECOM/WML will build and commission all the modifications of the RCWF included in this project.

The scope of work for the construction management services for Phase 2B is organized into four tasks as follows:

- Task 9 – Project Management During Construction
- Task 10 – Procurement and Construction Management
- Task 11 – Quality Control and Quality Assurance
- Task 12 – Safety

A detailed description of these tasks is provided in the following subsections.

Task 9 – Project Management during Construction

Objective: The overall objective of this task is to ensure on-time and on-budget progression of all Phase 2B tasks according to the scope (Task 6 – Task 10), fluid and coordinated communication with City staff, adequate project controls and quality of all deliverables.

AECOM/WML Activities: See sub tasks as outlined below:

Deliverables: See sub tasks as outlined below:

Key Understanding: AECOM/WML DB Project Manager, Construction Manager, and Design Manager, will be responsible to the Project Manager for the City of Stockton Municipal Utilities Department.

Meetings/Travel: In general the AECOM/WML DB Project Manager, Construction Manager and Design Manager (or their respective designees) will attend weekly progress review meetings in person or by video conference. Others to attend as needed.

Information and Services Provided by Others: City to provide timely feedback on all deliverables including meeting agenda and meeting minutes, updated schedules, and progress reports. City to coordinate information requests from third parties including its consultants, stakeholder groups, and City council.

Sub Task 9.1 – Schedule of Work Products

AECOM/WML Activities: Prepare a listing and schedule of work products requiring City review within 30 calendar days of Phase 2B Notice to Proceed. Include a minimum two-week review period for each submittal, and draft and final submission dates.

Deliverables: Word or Excel versions of draft Schedule of Work Products for review and comment by City staff, and a PDF of final Schedule of Work.

Sub Task 9.2 – Progress Review Meetings

AECOM/WML Activities: Schedule and conduct weekly progress review meetings with City's leadership and City's representatives at MUD offices or by video conference calls with equipment provided by AECOM/WML. Generate and distribute meeting minutes for each meeting. Distribute meeting agendas at least one business day prior to each meeting date. Other documents requiring City review prior to the meeting will be submitted at least two weeks in advance.

Deliverables: Meeting agendas and meeting minutes.

Sub Task 9.3 – Schedule Updates

AECOM/WML Activities: Update Phase 2 schedule monthly, comparing actual progress to the originally proposed schedule and in accordance with CONSTRUCTION PROGRESS SCHEDULES Section (01311).

Deliverables: PDF of updated schedules.

Sub Task 9.4 – Monthly Payment Requests and Progress Reports

AECOM/WML Activities: Prepare monthly invoices in accordance with actual progress and schedule of values and a monthly progress report to accompany each invoice for the previous month's work. Progress reports will review major work activities and schedule by task, and document progress made during the past month, accomplishments, critical items requiring action or resolution, and a look-ahead to the next month's progress

goals. Monthly progress report content will include information meeting the State Revolving Fund and federal WIFIA reporting requirements, to the extent such information originates from AECOM/WML, for use by City in preparing funding program reports.

Deliverables: PDF of monthly invoices and monthly progress reports. Microsoft Word file of monthly progress report content.

Sub Task 9.5 – Coordination

AECOM/WML Activities: Coordinate with permitting agencies except for the Regional Board and San Joaquin Valley Air Pollution Control District, which will be coordinated by the City) and other consultants as necessary. Provide meeting minutes to City within five business days of each meeting.

Deliverables: Meeting minutes.

Sub Task 9.6 – Document Management System (DMS)

AECOM/WML Activities: In addition to maintaining an internal filing system for all project-related documents, continue to maintain an internet-based electronic DMS using a SharePoint platform to provide uploading and retrieval of project-related documents for project team members and appropriate City staff. Pertinent documents uploaded into the DMS will include letters, memoranda, reports, meeting handouts and minutes, presentations, calculations, drawings, specifications, invoices and other appropriate written or graphical documents related to the project. Provide links and search functions indicating where the documents are located within the DMS.

Deliverables: Continuation of an Internet based DMS (SharePoint Site – already in operation from Phase 2A)

Sub Task 9.7 – Decision Log

AECOM/WML Activities: Provide an updated decision log on a monthly basis to both document key decisions that have been made and outstanding decisions that have yet to be made.

Deliverables: Excel spreadsheet of updated decision log available in SharePoint Site.

Task 10 – Procurement and Construction Management

Objective:

- Provide professional services to procure the materials, equipment, and labor, including self-performed or contracted services to support the construction of this project.
- Provide professional services to manage and administer all the resources involved in the construction of the project.

AECOM/WML Activities: Adequate staff, commensurate with the level of effort required at the different stages of the project, will be assigned to support the activities for procurement and construction management. Construction staff will be on-site throughout the construction of the project.

Activities to be conducted under this task include:

- Complete procurement of all equipment and procure materials necessary for construction.
- Procure all subcontractors necessary for the construction activities that will not be self-performed.
- Administer all design information (drawings, specifications, design changes) used for construction.

- Manage RFIs.
- Prepare Request for Clarifications (RFC) to request guidance or direction from City Representative.
- Assist DB PM with information for change management.
- Plan all construction activities.
- Prepare timely System Outage Requests (SOR) to coordinate unit process or plant shutdowns
- Manage all construction subcontractors and vendors
- Organize, coordinate and direct all field activities in cooperation with RWCF staff
- Implement quality control during construction.
- Maintain construction schedule, document progress including a photographic record.
- Prepare monthly invoices.
- Manage the construction of project in accordance with the Contract amendment and supporting documents.
- Ensure appropriate environmental mitigations for construction are implemented.
- Ensure construction activities are conducted in accordance with the project health and safety plan.
- Mark up drawings to produce conformed and record drawings (in coordination with resident engineer).

Deliverables:

Documentation on this subtask will be saved in SharePoint and available to the City at any time. Documentation will include:

- Equipment and material submittals, including interim submittals, associated reviews by engineers, and final approved submittals.
- RFIs/RFCs and RFIs/RFCs responses.
- Change management documentation.
- Safety records.
- Construction reports.
- Inspection and testing records.
- Meeting agendas and minutes.
- Digital photos.

Key Understanding: City to assist construction staff with timely coordination and sequencing of construction activities that can have an impact on the project schedule.

Meetings/Travel: Minor travel from supporting staff not assigned full time to the project.

Information and Services Provided by Others: None.

Task 11 – Quality Assurance and Quality Control

AECOM/WML Activities:

AECOM/WML will staff the project with qualified individuals to implement and enforce the QMP for the different project stages in accordance with QUALITY CONTROL Section (01400) of the contract documents. Staffing will include an onsite QC Manager and at least one inspector to inspect and oversee construction activities taking place. The QA manager will periodically audit the implementation of the QC program to provide oversight on the proper implementation and documentation of the QMP and report its findings to the City.

Key Understanding: AECOM/WML will assign a full time QC manager and up to 2 full time inspectors for the duration of construction. QC staff will work in close coordination with resident engineers assigned to the project. QA and QC managers to report directly to Design-Build Project Manager.

Meetings/Travel: Minor travel from supporting staff not assigned full time to the project. QC manager and inspectors will be on site.

Information and Services Provided by Others: None.

Deliverables: All documentation required in the QMP and contract documents including QA audits, QC plans for the different project stages/activities, QC records of inspections and testings in accordance with QUALITY CONTROL Section (01400) of the contract documents.

Task 12 – Safety

AECOM/WML Activities:

AECOM/WML will staff the project with qualified staff to implement and enforce the safety program as appropriate for the different stages of the project, including a designated Safety Supervisor as required in the GENERAL CONDITIONS Section (00700) of the contract documents.

Key Understanding: Safety Supervisor will be assigned full time to safety duties.

Deliverables: Safety records per Safety Plan

Design Scope Clarifications

1. The design is based on the subsurface conditions described in the Final Geotechnical Investigation dated December 4, 2018.

Appendix A CMMS Data Input Forms

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City of Stockton Municipal Utilities Department
Regional Wastewater Control Facilities Modifications Project
Phase 2B - Final Design and ESDC and Construction Management
Services Scope of Work

[illegible]

City of Stockton Municipal Utilities Department
Regional Wastewater Control Facilities Modifications Project
Phase 2B - Final Design and ESDC and Construction Management
Services Scope of Work

[illegible]

City of Stockton Municipal Utilities Department
Regional Wastewater Control Facilities Modifications Project
Phase 2B - Final Design and ESDC and Construction Management
Services Scope of Work

[illegible]

City of Stockton Municipal Utilities Department
Regional Wastewater Control Facilities Modifications Project
Phase 2B - Final Design and ESDC and Construction Management
Services Scope of Work

[illegible]

Appendix B

Preliminary Outlines for Operations Manual and Maintenance Manual

Stockton RWCF Operations Manual Outline

Volume 1 – Overview of Operations

Division A – Introduction

1. Contents of this Volume
2. Background
3. General Plant Layout and Control Concept
4. Process and Instrumentation (P&ID) Drawing Reference
5. Biological Process Description

Division B – Monitoring and Sampling Requirements

1. Sampling Requirements
2. Sample Locations
3. Laboratory Tests and Terms
4. Standard Method References

Appendices

Process Control Narratives will be included in the Appendix, but may be bound separately.

Volume 2 – System and Component Descriptions

Division 5 – Fine Screens and Wet Weather Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 10 – Influent Pump Station and Grit Removal

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 20 – Primary Clarifiers

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 22 – Primary Sludge Pumping

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 23 – Primary Scum Pumping

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 25 – Primary Effluent Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 30 – Aeration Basins

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 40 – Secondary Clarifiers

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 45 – RAS and WAS Pump Stations

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 47 – Secondary Scum Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 50 – Disk Filtration

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 55 – UV Disinfection and 3W Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 56 – Final Effluent Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 57 – Diversion Pump Station

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 60 – Gravity Thickening

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 65 – Gravity Belt Thickening

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 70 – Anaerobic Digestion and Digested Sludge Holding Tank

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 75 – Centrifuge Building

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Division 80 – Centrate and Filtrate Equalization

1. Process Description
2. Normal Operation
3. Alternate Operation
4. Control Concepts
5. Troubleshooting

Appendices

Stockton RWCF Maintenance Manual Outline

Maintenance Manual

Division A – Introduction

1. Contents of this Manual
2. General Plant Layout
3. Routine Maintenance Plan
4. Special Maintenance and Recommended Inspections

Division B – Vendor's Maintenance Manuals

1. Fine Screens
2. Influent Pump Station Pumps
3. Grit Removal Equipment
4. Primary Clarifiers Equipment
5. Primary Sludge Pumping Equipment
6. Primary Scum Pumping Equipment
7. Primary Effluent Pump Station Equipment
8. Aeration Basins Equipment
9. Secondary Clarifiers Equipment
10. RAS and WAS Pump Stations Equipment
11. Secondary Scum Pump Station Equipment
12. Disk Filtration Equipment
13. UV Disinfection and 3W Pump Station Equipment
14. Final Effluent Pump Station Equipment
15. Diversion Pump Station Equipment
16. Solids Dewatering Facility (Centrifuge)
17. Centrate and Filtrate Equalization
18. Ancillary Equipment (Only purchased as part of this project)

Appendices

Appendix C Acceptance Testing Plan Outline

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Acronyms

AECOM/WML	AECOM/W. M. LYLES JOINT VENTURE
BOD	biochemical oxygen demand
BOD ₅	measures the quantity of biodegradable organic matter contained in water.
CBOD	Carbonaceous Biological Demand
CEPT	Chemically Enhanced Primary Treatment
COD	chemical oxygen demand
gpcd	gallons per capita daily
IPS	influent Pump Station
lb/d	pounds per day
lb/d/sf	pounds per day per square feet
lb/sf	pounds per square feet
mg/L	milligrams per liter
mgd	millions of gallons per day
MLE	Modified Ludzack–Ettinger
MLR	Mixed liquor return
MLSS	mixed liquor suspended solids
MLVSS	mixed liquor volatile suspended solids
NH ₃ -N	ammonia as nitrogen
NO _x -N	nitrate + nitrite nitrogen
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit(s)
NWRI/AWWA RF	National Water Research Institute/American Water Works Association Research Foundation
PLCs	programmable logic controllers
RAS	return-activated sludge
RWCF	Regional Wastewater Reclamation Facility
SCADA	supervisory control and data acquisition
TKN	Total Kjeldahl Nitrogen
TS	Total Solids
TSS	Total Suspended Solids
UV	ultraviolet
VFA	Volatile Fatty Acids
WAS	waste-activated sludge
WWTP	wastewater treatment plant

Outline of Acceptance Testing Plan

1.1 Stockton Regional Wastewater Reclamation Facility (RWCF) Modifications Project

1.1.1 Assumptions:

1. The RWCF modifications project is a partial renovation and upgrade of an existing wastewater treatment plant (WWTP). AECOM/WML will provide acceptance testing for new processes and equipment (e.g., new modified Ludzack-Ettinger [MLE] secondary treatment, new disk filters, and new ultraviolet [UV] disinfection) but will not provide acceptance testing for existing equipment. New equipment/systems that overlap existing and new facilities (e.g., supervisory control and data acquisition [SCADA] system) will be operated during a four week acceptance test to demonstrate proper operation of both existing and new equipment per design. Note all existing equipment will not be in service during acceptance testing. Thus, during acceptance testing, demonstration of controls for existing equipment will only be demonstrated if it is in service and needed to demonstrate performance of new processes and equipment.
2. This plan is an outline only – a more detailed Acceptance Test Plan will be developed and issued for review and comment no later than six months prior to startup.
3. Operations during startup and commissioning and acceptance testing will be a joint effort by the Regional Wastewater Reclamation Facility (RWCF) operations staff and AECOM/WML commissioning and operations staff. During this period, AECOM/WML will provide day to day leadership and will generally have an operations leader available for 24 hours a day. RWCF staff will be operating the new facilities during startup and commissioning and this will continue during acceptance testing. All basic operational functions, from putting equipment into and out of service, collecting routine samples for process control, and responding to SCADA alarms will be done by RWCF staff with guidance and advice from operations staff from AECOM/WML.
4. Influent flow at the time of testing can be expected to be at projected (i.e., January 2023) design loadings and pollutant concentrations as defined in the Final Basis of Design Report (see Table 3-8).
5. These processes will be demonstrated over a four week period. In general, the liquid processes will be operated to treat the influent flow and loads that enter the RWCF over the four week test period. In accordance with this test period, process testing will demonstrate performance under simulated maximum monthly loading conditions. An acceptance test plan will be developed prior to startup; however, operating equipment/unit processes will conform to the guidelines summarized in Tables 1 and 2 below and as further discussed herein.

The expected range of normal operating conditions is summarized in Table 2. 28-day running averages were developed for influent flow, Carbonaceous Biological Demand (CBOD) pounds per day (lb/d), and Total Suspended Solids (TSS) lb/d. Because CBOD and TSS are sampled only 2–3 days a week, blank values were omitted and all the data placed back to back to compute the running averages. Lower and upper operating bands were defined by adding or subtracting one standard deviation from the overall average value. Similar methodology was followed for the primary effluent CBOD and TSS loads. The net result of this analysis are upper and lower limits for the operating conditions that most likely will occur during acceptance testing. These limits, in particular the upper operating bands, can then be used to evaluate the minimum number of operating units that must be in service to prevent any overloading or exceedance of the design capacity for each unit treatment process. Results of this analysis and further notes on each unit process are summarized below. Please note that if rapidly increasing (e.g., wet weather) flow conditions occur during testing, AECOM/WML may choose to bring additional equipment (e.g., screens, grit chambers, clarifiers, aeration basins, etc.) into service, if deemed necessary, or may choose to divert any excess flow to the ponds.

Equipment for major unit processes that will be in service during testing is summarized as follows:

- New influent fine screens (40 millions of gallons per day [mgd] capacity each) will generally be operated with two screens in service. The four new screens will alternate being in service for durations to be determined in the test plan. Hydraulic capacity testing for the screens is discussed under specialty testing below.
 - Two new vortex grit units will be in normal operation. Performance sampling for the new grit chambers is discussed under specialty testing below.
 - The six primary clarifiers will normally be in service. Since testing is being conducted under simulated maximum month conditions, Chemically Enhanced Primary Treatment (CEPT) will normally be employed.
 - Three aeration basins and three secondary clarifiers will be in service for the new MLE activated sludge process. Because the potential exists for overloading the aeration basins and since diversion can readily be accomplished (e.g., by setting a fixed flow from the primary effluent pump station and allowing any excess to overflow to diversion), diversion of some fraction of the aeration basin influent flow may be required for the proposed three aeration basin operation.
 - Two of the three disk filters will be in service.
 - Three of the four UV disinfection channels will be in service.
 - Details on sampling frequency and proposed analytical parameters are provided below in the Test Plan.
6. Average Total Kjeldahl Nitrogen (TKN) concentration in the aeration basin influent over the acceptance testing period shall not exceed the design basis concentration (as denoted in the mass balance to be issued with the final design).
7. At the time of testing, all construction will be complete except for:
- [This will be completed in the final test plan once a final construction schedule is available]
8. Construction of the new influent Pump Station (IPS), headworks, primary clarifier renovations new secondary treatment and other work (including disk filters, new UV system, sludge improvements, and new SCADA and electrical improvements) will all be complete, fully tested, with all programmable logic controllers (PLCs) and SCADA programming complete, and ready for start-up before acceptance testing is initiated.

Table 1: Unit Process Design Capacities for Maximum Month Loading Conditions

Process Area	Mass Balance Influent Flow or Loading	Units	Unit Capacity
Primary Clarifiers	Maximum Month 52.5 mgd	8	6.6 mgd @ Maximum Month
	Solids loading	8	14,500 lb/d TSS @ Maximum Month
Aeration Basins	Maximum Month 54.5 mgd	4	13.6 mgd @ Maximum Month
	Maximum Month 66,300 lb/d B	4	16,575 lb/d BOD @ Maximum Month
Secondary Clarifiers	Maximum Month 54.5 mgd	4	13.6 mgd @ Maximum Month
	Solids loading	4	25 lb/d/sf @ Maximum Month
Tertiary Filtration	Maximum Month 48 mgd	2	24 mgd
	Solids loading	3	1.6 lb/sf filter area max.
UV Disinfection	Hydraulic	4	17 mgd per channel

- Notes:

1. Secondary clarifier solids loading assumes 2,900 milligrams per liter (mg/L) mixed liquor suspended solids (MLSS) and 60% return-activated sludge (RAS) return rate

Table 2: Range of Normal Operation and Consequent Acceptance Testing Loading Conditions

Parameter	Units	Lower limit	Average	Upper limit
Influent Daily Average flow	mgd	27.2	31.6	36.0
Influent Maximum Week Flow	mgd	29.8	34.6	39.3
Maximum Week Diurnal Peak hour flow	mgd	37.3	43.3	49.1
Influent CBOD	lb/d	73,700	86,300	98,900
Influent TSS	lb/d	65,700	80,100	94,500
Primary Effluent CBOD	lb/d	40,600	47,500	54,400
Primary Effluent TSS	lb/d	23,000	28,000	33,100

Notes:

1. Flows based on the 12-month period from July 2016 to June 2017. Values were escalated to January 2023 using 92 gallons per capita daily (gpcd). Lower and upper limit values were established using one standard deviation, either plus or minus with respect to the average.
2. Diurnal peaking factor for maximum week flow used is 1.25.
3. Carbonaceous Biological Demand (CBOD) and Total Suspended Solids (TSS) loading data based on the period from November 2015 to September 2017. Values were escalated to January 2023. Lower and upper limits were established in a similar manner to flow.
4. Primary effluent CBOD and TSS loadings assume the use of Chemically Enhanced Primary Treatment (CEPT).

Table 3: Proposed Units in Operation during Acceptance Testing Loading Conditions

Unit Process	Criteria	Units	Unit Capacity	Required Units in Service	
				Lower limit	Upper limit
Fine Screens	Hydraulic	4	40 mgd	2	2
New IPS	Hydraulic	3	30 mgd	2	2
Vortex Grit	Hydraulic	2	46.1 mgd	1	2
Primary Clarifiers	Hydraulic	8	6.6 mgd @ Maximum Month	5	6
	Solids loading		14,500 lb/d TSS @ Maximum Month	5	7 ²
Aeration Basins	Hydraulic	4	13.6 mgd @ Maximum Month	2	3
	Organic loading	4	16,575 lb/d BOD @ Maximum Month	3	4 ²
Secondary Clarifiers	Hydraulic	4	13.6 mgd @ Maximum Month	2	3
	Solids loading		25 lb/d/sf @ Maximum Month	2	3
Tertiary Filtration	Hydraulic	3	24 mgd	2	2
	Solids loading		1.6 lbs/sf filter area max.	-	-
UV Disinfection	Hydraulic	4	17 mgd per channel	3	3

Notes:

1. Secondary clarifier solids loading assumes 2,900 milligrams per liter (mg/L) mixed liquor suspended solids (MLSS) and 60% return-activated sludge (RAS) return rate
 2. Values in red denote situations where the upper limit of required units in service exceeds the proposed number of units in service during testing – a situation where extra operational caution is warranted as influent flow reduction may be necessary to keep unit process loadings within design limits.
9. Once the Main Plant process construction is complete, setup and transition for the four week acceptance testing will begin. All parties have agreed that acceptance testing will not be delayed until the onset of cold weather conditions.
 10. Because of potential sudden variations in flows and loadings, AECOM/WML may alter the amount of flow to diversion or bring additional equipment (i.e., more aeration basins or clarifiers or disk filters) into service. Various scenarios for increased influent flows and loadings will be addressed in the final Acceptance Test Plan. Agreement will be obtained with RWCF Operations staff on what course of action to take for each scenario. If action is deemed necessary by the AECOM/WML during actual Acceptance testing, RWCF

operations will be notified prior to taking any corrective action in accordance with the approved Acceptance Test Plan. Information collection during Acceptance testing will rely on a number of existing samplers and flowmeters. This list of existing equipment will be finalized in the final Acceptance Test Plan. Should any of this equipment not be operational or not work at the time of testing, it is assumed that the City of Stockton (City) will make appropriate repairs or it will be deemed acceptable to proceed without the information.

11. Based on recent discussions with the City, no BioWin modelling will be deemed necessary nor will it be included to interpret acceptance testing results including determination of theoretical impacts of different influent loadings or aeration basin temperatures.
12. Testing to pre-select polymers for centrifuge and CEPT operations will be done prior to Acceptance testing.

Test Plan

1. Run target flow through the RWCF for a consecutive 28-day period. Acceptance testing period will be conducted with only the following equipment in service for acceptance testing:
 - a. Two new fine screens
 - b. New influent pump station
 - c. Two new grit vortex grit units (with new grit pumps & grit washers)
 - d. Six existing but renovated primary clarifiers (with new sludge and scum pumps) (note as indicated in Table 3, some trimming of influent flow maybe necessary should solids loadings trend high)
 - e. Re-purposed existing biotower (new primary effluent) pump station
 - f. Three new aeration basins (with new mixed liquor return (MLR) pumps, new anoxic mixers, & new instrumentation). Note as indicated in Table 3, some trimming of influent flow maybe necessary should organic loadings trend high)
 - g. New blowers
 - h. Three new secondary clarifiers
 - i. New RAS pumping
 - j. New waste-activated sludge (WAS) pumps
 - k. Two new disk filters (filters to swap each weekly or biweekly so all three are operated over the 4 week test program).
 - l. New UV disinfection.
2. Sampling & Data Monitoring Plan – Liquid Stream Major Unit Processes. All sampling and analysis will be provided by AECOM/WML except for the routine sampling and analysis normally done by the City. Sampling for acceptance testing will generally be conducted 5 days a week and across the four week period, five sample days will include a weekend.
 - a. Flow - These existing flow measurements will be continuously recorded in SCADA
 - i. Raw wastewater flow will be the sum of:

1. Each flowmeter on the discharge of each new IPS pump (three total).

2. The new flowmeter on the new forcemain from existing wet weather pump station

- ii. Primary sludge flow
 - iii. RAS
 - iv. WAS
 - v. Combined mixed liquor internal recycle
 - vi. Tertiary filtration influent flow
 - vii. UV disinfection influent flow
 - viii. Overall facility effluent flow (UV disinfection influent flow minus 3W water flows)
- b. Raw Influent
 - i. Location – existing composite sampler at the existing headworks
 - ii. Basis – time composite assumed except for pH and temperature, which will be grab samples
 - iii. Analysis for CBOD, BOD, chemical oxygen demand (COD), TSS, TKN, ammonia as nitrogen (NH₃-N), temperature, and alkalinity.
 - iv. Frequency: 5 days a week. Temperature and pH will be measured in the field
- c. Primary Influent Characterization
 - i. Location – New composite sampler at the new headworks
 - ii. Basis – Flow proportional composite assumed except for pH and temperature, which will be grab samples
 - iii. Analysis for CBOD, COD, TSS, TKN, NH₃-N, pH, temperature, and alkalinity
 - iv. Frequency: 5 days a week. Temperature and pH will be analyzed in the field
- d. Primary Effluent
 - i. Location – rental composite sampler at the primary effluent box of PCs 1-3
 - ii. Basis – time composite except for pH and temperature, which will be grab samples.
 - iii. Analysis for CBOD, COD, TSS, TKN, NH₃-N, pH, VFA (Volatile Fatty Acids - 3 days/week) Temp. and Alkalinity
 - iv. Frequency: 5 days a week. Temperature and pH will be analyzed in the field.
- e. Aeration Basin Influent Characterization
 - i. Location – New composite sampler at the new primary effluent (formerly biotower) pump station discharge

- ii. Basis – flow proportional composite using (new flow meter on pump station outlet) except for pH and temperature, which will be grab samples
 - iii. Analysis for CBOD, BOD, COD, TSS, TKN, $\text{NH}_3\text{-N}$, pH, Temp. and Alkalinity
 - iv. Frequency: 5 days a week. Temperature and pH will be analyzed in the field.
 - f. New Aeration Basin Effluent
 - i. Location – sample from each aeration basin in service, just before the effluent weir
 - ii. Basis – grab sample
 - iii. Analysis for MLSS and mixed liquor volatile suspended solids (MLVSS).
 - iv. Frequency: 5 days a week.
 - g. Secondary Effluent (Tertiary Filtration Influent)
 - i. Location – rental composite sampler at the new tertiary diversion structure
 - ii. Basis – flow proportional composite
 - iii. Analysis for CBOD, COD, TSS, TKN, $\text{NH}_3\text{-N}$, turbidity, Nitrates, Nitrites, pH, Temp. and Alkalinity
 - iv. Frequency: 5 days a week. pH and temperature will be analyzed in the field, turbidity will be recorded continuously.
 - h. Disk Filter Effluent/UV Disinfection Influent
 - i. Location – turbidity meter location
 - ii. Basis – continuous sample
 - iii. Analysis for turbidity
 - iv. Frequency: 7 days a week for turbidity, which will be recorded continuously
 - i. UV Disinfection Effluent
 - i. Location – New composite sampler
 - ii. Basis – time based composite for all parameters except total coliforms which shall be a grab sample.
 - iii. Analysis for CBOD, COD, TSS, TKN, $\text{NH}_3\text{-N}$, nitrate + nitrite nitrogen ($\text{NO}_x\text{-N}$), and total coliforms.
 - iv. Frequency: 5 day a week
3. Sampling and Monitoring Plan – Solids Processes
- a. Solids Production
 - i. WAS flowrate will be recorded daily using the existing flowmeter and information in SCADA

- ii. WAS/RAS TSS concentration. Sampling and testing will be conducted by the AECOM/WML (MLSS and RAS TSS will be determined a minimum of three days per week)
- iii. AECOM/WML will determine sludge age setpoint and desired wasting schedule prior to and during the 28-day acceptance test period.
- iv. AECOM/WML will monitor and record primary clarifier TSS & CBOD removal rates and daily average ferric chloride and polymer dosages. Effluent from Primary Clarifiers No. 1-3 will be used for monitoring purposes, as a surrogate for all primary clarifier performance. Primary sludge concentration will be monitored in conjunction with centrifuge testing.
- v. During testing, it is anticipated that only the new centrifuge will be needed to handle normal digested sludge quantities. During the testing period, normal plant testing will take place. In addition, AECOM/WML will conduct 3 days of testing including:
 - 1. Primary sludge – An 8-hour test period with hourly composites for total solids analysis.
 - 2. Digested sludge – An 8-hour test period with hourly composites for total solids analysis.
 - 3. Sludge cake dryness (% Total Solids [TS])
 - 4. Solids capture based on cake solids, %TS of the digested sludge, flow to the centrifuge of digested sludge and centrate TSS concentration.
 - 5. Polymer consumption per ton of digested sludge will be recorded

4. Specialty Testing and Sampling

These tests are proposed to demonstrate performance for processes with special testing requirements or for ancillary equipment. Based on their specialty nature of this equipment, a condensed or shorter duration period is typical industry practice. This includes fine screens, IPS, vortex grit chambers, and the centrifuge. Proposed test durations and sampling protocol are outlined below:

- a. New Fine Screen
 - i. Volume of screenings will be recorded daily during the 28-day testing period.
 - ii. Hydraulic capacity will be demonstrated by peak flows and associated diurnal peaks that happen to occur during the 28-day test period.
- b. New Influent Pump Station.
 - i. Hydraulic capacity of each pump will be demonstrated over a one-hour test period. A single pump will be operated with excess flow diverted as necessary to the re-purposed wet weather pump station.
 - ii. The cleaning cycle for the new IPS will also be demonstrated.
- c. New Vortex Grit.
 - i. Volume of washed and dewatered grit will be recorded daily during the 28-day testing period.
 - ii. Hydraulic capacity will be demonstrated by peak flows and associated diurnal peaks that happen to occur during the 28-day test period.
- d. Pump Capacity Testing

- i. Pump capacity testing for a period of 15 to 30 minutes will be scheduled at a time that will avoid disruption of other acceptance tests. The pump capacity testing will demonstrate hydraulic capacity of new major pumping equipment. Duration of testing may be limited in some cases (e.g., primary sludge, WAS, effluent pumps) depending on the availability of sludge or treated effluent.
- ii. These include:
 - 1. MLR pumps
 - 2. RAS pumps
 - 3. WAS pumps
 - 4. Effluent pumps
 - 5. Plant water pumps
 - 6. Primary sludge pumps
 - 7. New centrifuge feed pump.
- iii. Existing pumps performance will also be documented for record purposes. These pumps include:
 - e. Primary effluent pumps (re-purposed biotower pumps)
 - f. Diversion pumps (re-purposed secondary effluent pumps)
 - g. UV Disinfection Testing

UV testing conducted as part of the commissioning of the UV system will be in conformance with the Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse published by the National Water Research Institute/American Water Works Association Research Foundation (NWRI/AWWA RF) in August 2012, hereinafter called the 2012 NWRI Guidelines. Specifically, the following will be tested and documented a part of the commissioning program for this system:

 - i. Electrical components
 - ii. Inlet/outlet velocity distribution (if full-scale channels (reactors) use more lamps than the reactors used for validation testing)
 - iii. Water level
 - iv. Flow split between reactor trains
 - v. Controls and alarms
 - vi. Instrument calibration
 - vii. Spot check bioassay tests. See Attachment A.

1.2 Performance Requirements

Final effluent quality will conform to the current NPDES Permit for those parameters as summarized in Table 4 below. Compliance for this acceptance test for all parameters but turbidity coliform and turbidity will be determined based on samples collected at the effluent outfall structure. Coliform will be determined at a location acceptable to the City at or near the downstream end of the UV disinfection effluent quality at the UV disinfection effluent

channel. For turbidity, the turbidity meters provided as part of the project, downstream of the continuous monitoring in the tertiary filters, will be used. During acceptance testing, monitoring of the RWCF influent and effluent quality will be done by the City in accordance with normal plant practices (e.g., 2-3 days per week). These factors will be further addressed in the final Acceptance Testing Plan.

Table 4: Final Effluent Quality Requirements¹

Constituent	Quantity or Concentration
BOD₅	Monthly Average: ≤ 10 mg/L Weekly Average: ≤ 15 mg/L Daily Maximum: ≤ 20 mg/L
TSS	Monthly Average: ≤ 10 mg/L Weekly Average: ≤ 15 mg/L Daily Maximum: ≤ 20 mg/L
NH₃-N – Summer (April 1 – October 30)	Monthly Average: ≤ 1.2 mg/L Daily Maximum: ≤ 4.0 mg/L
NH₃-N – November	Monthly Average: ≤ 2.3 mg/L Daily Maximum: ≤ 9.9 mg/L
NH₃-N – Winter December 1 – March 31	Monthly Average: ≤ 2.4 mg/L Daily Maximum: ≤ 9.6 mg/L
Nitrate + Nitrite as N	Monthly average: Total ≤ 10 mg/L
Turbidity	24 hr average: ≤ 2 NTU 95% of the time in any 24-hour period: ≤ 5 NTU At all times: ≤ 10 NTU
Total Coliforms	Weekly median ≤ 2.2 MPN/100mL For any 30-day period, no more than one sample > 23 MPN/100mL No sample greater than 240 MPN/100 mL

¹ Taken from Order R5-2014-0070-03, National Pollutant Discharge Elimination System (NPDES) No. CA0079138, Stockton, California, NPDES Permit Waste Discharge Requirements.

Performance of the new facilities at influent flows and loadings that exceed the design capacity as specified in the Final Basis of Design Report are not guaranteed.¹ Because of normal variations in wastewater strength, target loadings will be adjusted slightly downwards² during acceptance testing to avoid overloading the treatment system.

Because wastewater strength will vary plus actual loadings will not be determined until many days later, AECOM/WML cannot guarantee that target maximum monthly or maximum day loadings will be achieved during the 28-day acceptance testing period. The contract price includes a single acceptance test and does not include extending the testing or repeating the acceptance test should loadings during the 28-day testing period turn out to be unusually lower than normal.

¹ During the acceptance testing period, the RWCF will be operated at the loads and flows available at that time. Several factors complicate testing. First, parameters like CBOD are only determined 5 days (or more) later so there is a significant delay in responding to influent loading changes. Second, influent loadings cannot be configured to allow monthly average exceedances of Maximum Month design loadings as this would mean operation beyond the plants design capacity, potentially creating the risk of damage to the biomass and potential permit non-compliance. Normal industry practice is to stay one standard deviation below so that the risk of exceedance is minimized.

² This will be accomplished using a statistical analysis of the most recent plant data during development of the detailed performance testing plan. Typically target loadings are adjusted downwards by one standard deviation for BOD and TKN to minimize the risk of inadvertently overloading the treatment facilities beyond the design capacity.

The performance guarantee is based on the assumption that influent is not carbon limited. Readily biodegradable carbon (a.k.a., volatile fatty acids) and the filtered and flocculated COD will not be less than the average levels recorded in the May 2017 specialty sampling data (Appendix E of the Final Basis of Design Report).

Table 5 presents a summary of the proposed Acceptance testing criteria for each new or renovated unit process. Each unit process is a system, and most often consists of auxiliary equipment and appurtenances that all work together to create a functional step in the treatment process. For example, the primary clarifier system includes influent flow distribution weirs, effluent weirs, sludge rakes, cross conveyors, sludge pumps, scum collection system, scum pumps etc.

Multiple acceptance criteria are also included in Table 5. This includes:

- **Performance.** Process specific performance criteria, such as effluent quality, are included for unit processes if applicable (e.g., primary clarifiers and UV disinfection). For most unit processes, the overall goal is to meet the permit requirements (see Table 4) as measured in the final effluent at the effluent control structure.
- **Hydraulic capacity.** This is defined as the maximum design flow. Hydraulic testing, however, may be limited by the amount of available flow and accordingly it may not be possible, for example, to test the performance of the fine screens or vortex grit units under full wet weather flow conditions. Accordingly, hydraulic capacity for all the main unit processes will be tested by the maximum flow that occurs during the 28-day period with reduced numbers of units in service for simulating maximum month flows and loadings. As outlined previously, special short term hydraulic tests are included for new pumping equipment.
- **Reliable operation.** System operation for each unit process over the 28-day testing period will be used to demonstrate adequate reliability. This standard of adequacy does not mean perfection nor implies that testing must re-start should some component prove troublesome. Instead, adequacy is defined by (1) overall treatment system performance that meets the permit requirements and (2) demonstration that the system controls are adequate to control the process over the 28-day demonstration period.

Table 5: Proposed Acceptance Testing Criteria

Unit Process	Criteria	Acceptance Criteria
Fine Screens	Hydraulic capacity Reliable operation	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period
New IPS	Hydraulic Reliable operation	Demonstrate pump capacity for each pump Adequate performance during 28-day period
Vortex Grit	Hydraulic Reliable operation	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period
Primary Clarifiers	Hydraulic Reliable operation Performance	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period ≥ 65% removal for TSS & ≥ 45% removal of CBOD using CEPT ¹ ≥ 4.5% Total solids for the primary sludge
Aeration Basins	Hydraulic Reliable operation Performance	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period Meeting final effluent quality during 28-day period ²
Secondary Clarifiers	Hydraulic Reliable operation Performance	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period Meeting final effluent quality during 28-day period ²
Tertiary Filtration	Hydraulic Reliable operation Performance	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period Meeting final effluent quality during 28-day period ²
UV Disinfection	Hydraulic Reliable operation Performance	Demonstrate hydraulic capacity during wet weather flows Adequate performance during 28-day period Meeting final effluent quality for coliforms during 28-day period Passing 7 of 8 spot check bioassays ³
Centrifuge dewatering	Capacity Cake dryness Solids capture Reliable operation	Up to 3,500 lb/hr dry solids of digested sludge Greater than 20% solids Greater than 90% Adequate performance during 28-day period

Notes:

1. AECOM/WML will test Chemically Enhanced Primary Treatment (CEPT) performance during acceptance testing. Note that the design is a retrofit making best use of existing facilities and has not analyzed the effectiveness of the proposed Primary Clarifiers system using CEPT such as distributing CEPT chemicals and/or preventing short-circuiting. If modifications are required to achieve the performance criteria (e.g. additional mixing, new baffling, revised chemical feed points, etc.), they will be considered a change in scope.

2. The compliance point for effluent quality will be as described in Section 1.2.

3. The performance ratio for each test condition shall be calculated as the ratio between spot-check performance and predicted performance (from the operational model derived from the validation testing). A passing test is a test in which the performance ratio is equal or exceeds 1.0.. An example illustrating the spot-check commissioning tests and analysis is provided in the 2012 Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse published by the National Water Research Institute/American Water Works Association Research Foundation.

ATTACHMENT A
SPOT-CHECK COMMISSIONING TESTS FOR UV DISINFECTION SYSTEM

The spot-check bioassay testing will be used to demonstrate that the ultraviolet (UV) system delivers the expected performance under the Regional Wastewater Reclamation Facility (RWCF) operating conditions as designed. Specifically, the tests will show that the UV system meets the National Water Research Institute (NWRI) requirements for delivering the 100 millijoules per square centimeter (mJ/cm^2) validated dose accounting for end of lamp life (EOLL) and the lamp sleeve fouling factor (FF).

All testing will be conducted in general accordance with the Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse published by the National Water Research Institute/American Water Works Association Research Foundation (NWRI/AWWA RF) in August 2012, hereinafter called the 2012 NWRI Guidelines.

The Spot-Check bioassay testing, as outlined in the NWRI UV guidelines, will be performed by an independent third-party, experienced in UV disinfection of recycled water and qualified to perform the study. Tests will be conducted or witnessed by a California professional engineer (PE) qualified and experienced in this testing. The results will be documented in short report and stamped by the PE.

Eight test conditions will be investigated in a manner similar to conducting the validation tests as part of the full-scale commissioning test for the equipment selected. The spot-check commissioning test will show performance at eight different operational conditions.

Operational parameters include:

1. Bank placement (inlet, middle, outlet).
2. Ballast setting.
3. Flowrate.
4. UV transmittance.

Once the system is fully designed, the independent contractor will prepare a "Spot-Check Bioassay Testing Protocol" with the specific test conditions and site-specific protocols. A typical outline for this protocol would include the following elements:

1. Introduction
2. Purpose
3. City of Stockton RWCF UV System Description
4. Acceptance testing Program
 - 4.1. Testing Schedule
 - 4.2. Roles And Responsibilities
 - 4.3. Test Conditions
 - 4.4. Microbiology
 - 4.5. Ultraviolet Transmittance (UVT) Measurement
 - 4.6. Flow Measurement
 - 4.7. Water Level Measurement
 - 4.8. Electrical Measurement
 - 4.9. Mixing Test
 - 4.10. Steady State Time
 - 4.11. Control (Zero Dose) Test
5. Data Analysis
 - 5.1. Ms2 Inactivation Curve Determination
 - 5.2. Measured UV Dose Determination
 - 5.3. Reactor Scaling Factor Determination

5.4. Results Presentation

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Exhibit F
Phase 2B ESDC Cost

City of Stockton Municipal Utilities Department Progressive Design-Build Services
Regional Wastewater Control Facilities Modification Project

Phase 2B Engineering Fee will be negotiated with Phase 2B contract amendment.

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**Exhibit G
Reserved**

City of Stockton Municipal Utilities Department Progressive Design-Build Services
Regional Wastewater Control Facilities Modification Project

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Exhibit H
Phase 2B CM Cost

City of Stockton Municipal Utilities Department Progressive Design-Build Services
Regional Wastewater Control Facilities Modification Project

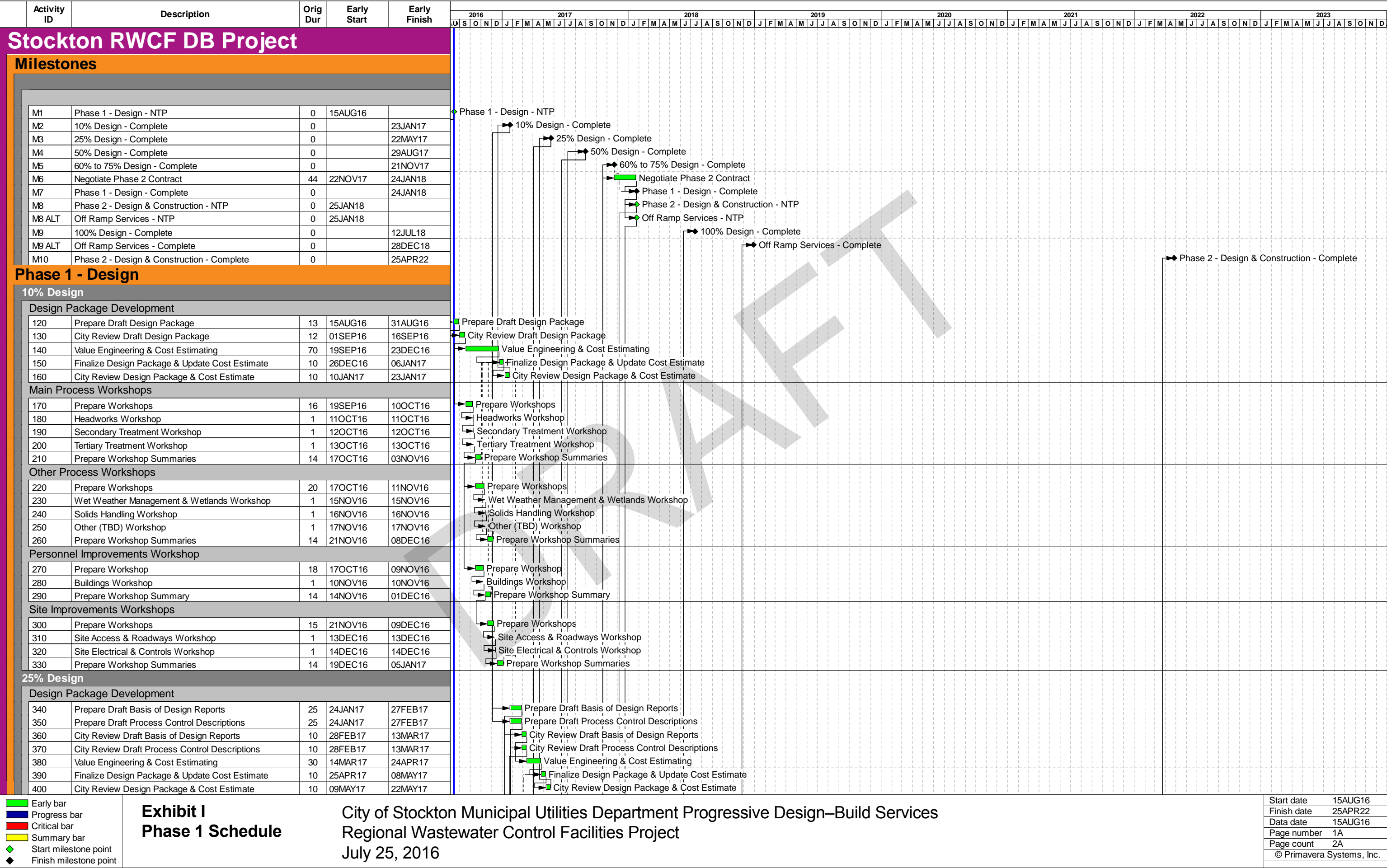
Phase 2B Construction Management Fee will be negotiated with Phase 2B contract amendment.

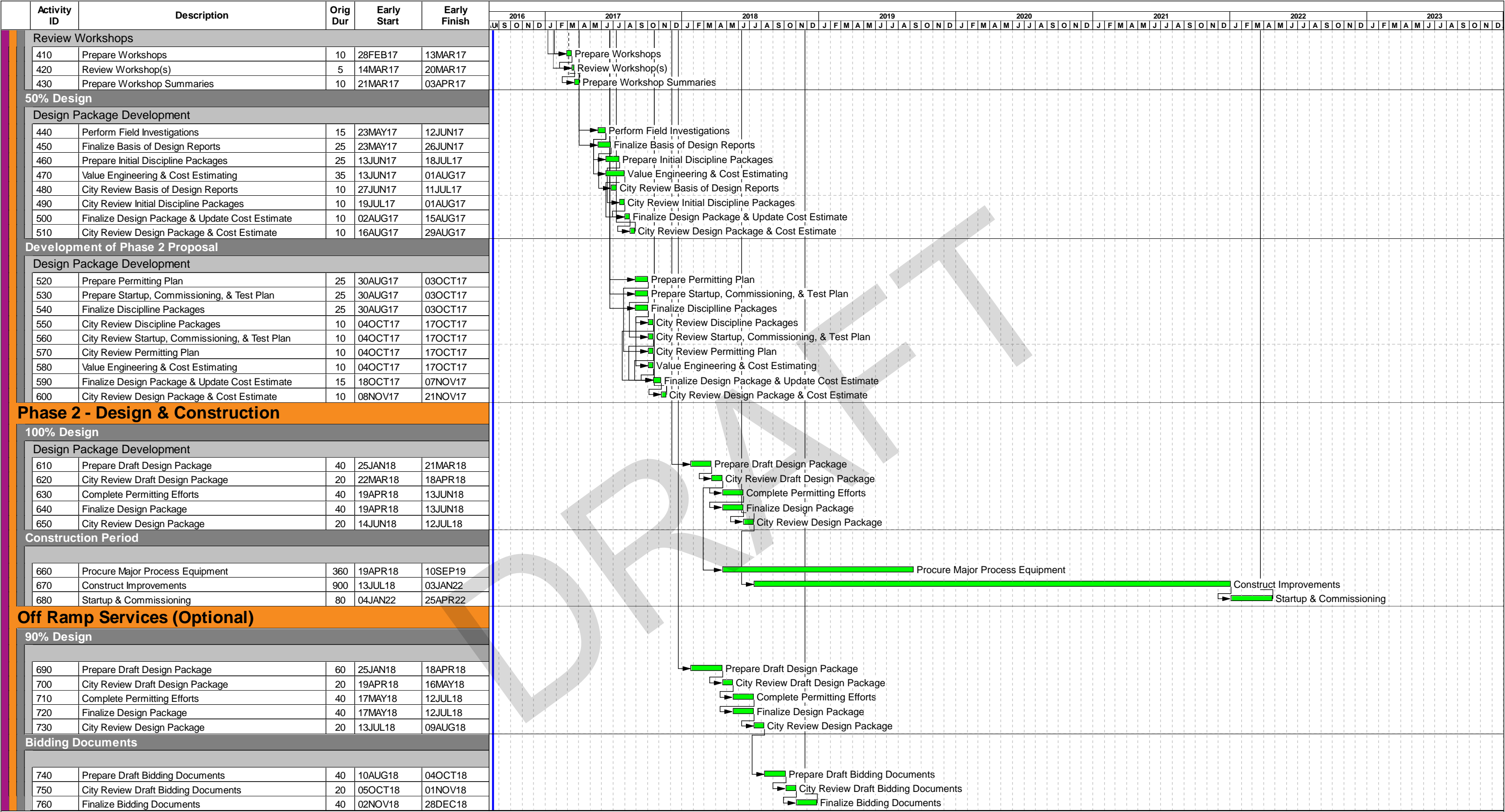
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Exhibit I
Phase 1 Schedule

City of Stockton Municipal Utilities Department Progressive Design-Build Services
Regional Wastewater Control Facilities Modification Project

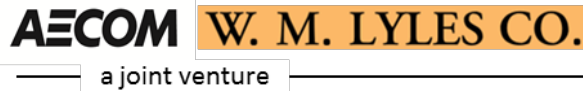
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- Early bar
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

Start date	15AUG16
Finish date	25APR22
Data date	15AUG16
Page number	2A
Page count	2A
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Submitted to
City of Stockton
Municipal Utilities
Department

EXHIBIT J

Off-Ramp Final Design Scope of Services

City of Stockton Municipal Utilities Department
Progressive Design Build Services
Regional Wastewater Control Facility Modifications Project

January 16, 2019

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Task 13 –Phase 2A Off-Ramp (Optional)

In the event that an agreement on a Contract amendment for Phase 2B between the City and AECOM/WML cannot be reached, the City will require completion of unified sets of plans and specifications for use by the City to solicit competitive bids for traditional construction of the Project. In such circumstances, AECOM will assume the responsibilities as the Engineer of Record and provide traditional engineering services for design, services during construction, project management, and permitting services. This task is described in detail in the following sub tasks.

Sub Task 13.1 – Project Management

Objective: Provide additional project management services for coordination activities, project records and documentation, meetings, and day to day communication associated with Off-Ramp services.

AECOM/WML Activities: Prepare an updated schedule of work products and project management plan, as necessary, and extend project management activities for the duration of the Off-Ramp Services. Continue to issue and maintain a decision log for the project.

Deliverables: Invoices and meeting minutes, decision logs.

Key Understanding: The project manager will be responsible for coordination, organization, control, monitoring, and reporting of activities associated with Off-Ramp services.

Information and Services Provided by Others: Construction management will be the responsibility of a City appointed Construction Manager.

Sub Task 13.2 – Final Design Submittal

Objective: Based on comments from the City review of the 90 percent design submittal completed under Phase 2A, prepare the final design documents for bidding.

AECOM/WML Activities: Based on City review comments from the 90 percent submittal, prepare bidding documents ready for printing and distribution to potential bidders. Submit three paper copies for City verification of incorporation of comments and final acceptance. The City will finalize bidding schedule and provide required bidding information to Engineer for incorporation into the bidding documents and specifications.

Drawings and specifications issued for construction (IFC) will be stamped by a professional engineer(s) licensed in the State of California, for bidding purposes and to secure required permits.

Deliverables:

- Final plans and specifications for bidding
- Three half size paper copies for City verification prior to final
- One full size set of stamped and signed final design drawings
- Five half size sets of stamped and signed final design drawings
- One loose bound set and four bound sets of specifications
- Two memory sticks containing PDF files of drawings and specifications

- Five bound hardcopies and CD with PDF of final engineer's opinion of probable construction cost.

Key Understanding: AECOM will prepare final design documents ready for printing and distribution to potential bidders based on 90 percent design previously completed in Phase 2A. Engineer's opinion of probable construction cost will be the cost estimate provided as the basis for Phase 2B bid proposal. Submittal of calculations is included in this scope to the extent needed to obtain permits for construction.

Meetings/Travel: One half day meeting to review changes to the final plans and discuss plans for bidding out the work.

Information and Services Provided by Others: City's comments on 90 percent design submittal review. City will provide specification sections covering Construction Specification Institute (CSI) Division 0 and Division 1 for incorporation into the contract documents. The City will finalize the bidding schedule and provide required bidding information for incorporation into the bidding documents and specifications.

Sub Task 13.3 – Permitting

Objective: Provide assistance to the City to obtain building and operating permits and to comply with other permitting terms and conditions, including environmental mitigation requirements.

AECOM/WML Activities: Coordinate with the City and the City's construction manager as needed to assist on permitting compliance activities.

Deliverables: None.

Key Understanding: It is understood that applying, securing, and complying with all project permits are the City's responsibility. Level of effort provided by AECOM limited to the budget for this task in Exhibit K.

Meetings/Travel: AECOM permitting lead to attend up to 4 meetings and conference calls as needed.

Information and Services Provided by Others: City or surrogates to request for specific assignments from AECOM as needed.

Sub Task 13.4 – Training Plan

Objective: Develop a training plan that adequately prepares designated staff to operate and maintain the facilities.

AECOM Activities: Consult with City to determine training requirements, and develop training plan that adequately prepares designated staff to operate and maintain the facilities. The training plan is intended for two purposes: 1) to guide the specifying of General Contractor and equipment manufacturer training requirements and 2) to guide the City and Construction Manager in preparing for training classes in coordination with facilities startup.

The training plan will encompass start-up and shutdown procedures, O&M manuals and procedures, and the SCADA system. The training plan will identify training needs for the facilities components and systems, training methods (classroom, field and hands-on), and a Microsoft Project schedule in coordination with the facilities construction and start-up schedule. The training plan also will identify the responsible party and the supporting parties for each element of the training program.

The plan will include an estimated level of effort for the City, Construction Manager, General Contractor, Engineer, and equipment manufacturer representative(s). Submit the first draft of the training plan to the City with the bidding documents, and finalize the training plan during construction of the facilities.

Deliverables:

- First draft training plan, submitted with bidding documents
- Final training plan

Key Understanding: AECOM will prepare a training plan developed to adequately prepare designated staff to operate and maintain the facilities. Level of effort provided by AECOM limited to the budget for this task in Exhibit K.

Meetings/Travel: None

Information and Services Provided by Others: City's input on training requirement and development of the draft training plan. City's input and comments from review of the draft training plan.

Sub Task 13.5 – Start-up and Testing Plan

Objective: In taking the Off-Ramp, the City will forgo the Initial and Final Acceptance Testing requirements of the Contract, yet the facilities testing requirements are an essential element of the General Contract specifications. Engineer shall consult with City to develop the start-up and testing plan to prepare the City, construction manager, and General Contractor for start-up and testing of the facilities.

AECOM Activities: Develop startup, commissioning and testing plans that will demonstrate facility compliance with design parameters developed in Phase 2A. These plans shall, at a minimum, consist of:

- Operations Manual, Maintenance Manual, Vendor Manuals available prior to startup.
- One day of classroom training using a PowerPoint presentation for the operators on highlights of the O&M manual with a written test.
- Classroom training by vendors for operator preventative maintenance and for mechanic/electrical/instrumentation training for preventative, corrective and predictive maintenance.
- Classroom training by manufacturer for preventative, corrective and predictive maintenance.

The start-up and testing plan also will serve as a basis for the applicable specification sections, which also will require the General Contractor to submit a Notice to Initiate and Notice of Completion for each testing phase. Therefore, it is important to formulate the start-up and testing plan with requisite activities performed in a logical progression, from the component and sub element level to the integrated system start-up and testing of the facilities. The plan shall indicate the required duration and sequence of start-up and testing activities, relative to the preparation of O&M manuals, completion of various elements of the training plan, and other activities that are related to the start-up and testing of the facilities. The plan will include the requirement for a 28-day continuous operations test performed on the total integrated system.

Deliverables:

- Draft Startup and Testing Plan
- Final Startup and Testing Plan

Key Understanding: AECOM will develop startup, commissioning and testing plans that will demonstrate facility compliance with design parameters. Manufacturer training will be responsibility of the contractor. Level of

effort provided by AECOM limited to the budget for this task in Exhibit K. Development of Operational Manual and Maintenance Manual is not included in this scope or associated budget in Exhibit K.

Meetings/Travel: None

Information and Services Provided by Others: City's to provide input on the development of the draft startup and testing plan. City's input and comments based on review of the draft startup and testing plan.

Sub Task 13.6 – Bidding Assistance

Objective: Provide technical assistance during the bidding phase to respond to questions and requests for clarifications from prospective bidders.

AECOM Activities: Conduct a pre-bid conference and during the bidding phase respond in writing to all request for clarification and issue addenda as required. Participate in a job walk with prospective bidders. Prepare plans and specifications, incorporating all addenda in the same format as the bidding documents.

Deliverables: Conformed plans and specifications for bidding:

- Three half size paper copies for City verification prior to final
- One full size set of stamped and signed conformed drawings
- Five half size sets of stamped and signed conformed drawings
- One loose bound set and four bound sets of conformed specifications
- Two memory sticks containing PDF files of conformed drawings and specifications

Key Understanding: The City will manage and conduct the bidding process and AECOM will provide bidding support including answering inquiries and preparing addenda. Level of effort provided by AECOM limited to the budget for this task in Exhibit K.

Meetings/Travel: Two AECOM team members, including design manager, will attend the pre-bid conference and job walk.

Information and Services Provided by Others: Advertising the project, receiving contractor questions and requests for clarification, issuing addenda and selection of a contractor.

EXHIBIT K - OFF-RAMP FINAL DESIGN COST

Client City of Stockton MUD

Project RWQCFModifications

Task No.	Task Description	Total AECOM Labor Hours	Total AECOM Labor (\$)	Total AECOM Expenses (\$)	Subs (includes 10% Markup) (\$)	TOTAL Cost (\$)
13	FIRST PHASE 2A OFF RAMP (OPTIONAL)					
13.1	Project Management	636	\$169,664	\$ 5,090	\$ -	\$ 174,754
13.2	Final Design Submittal	6,960	\$1,098,846	\$ 32,965	\$ 30,000	\$ 1,161,812
13.3	Permitting	200	\$31,992	\$ 960	\$ -	\$ 32,952
13.4	Project Database and CMMS	208	\$33,137	\$ 994	\$ -	\$ 34,131
13.5	Training Plan	344	\$72,997	\$ 2,190	\$ -	\$ 75,187
13.6	Start-up and Testing Plan	364	\$79,987	\$ 2,400	\$ -	\$ 82,387
13.7	Bidding Assistance	328	\$74,167	\$ 2,225	\$ -	\$ 76,392
	Subtotal Task 13	9,040	\$ 1,560,790	\$ 46,824	\$ 30,000	\$ 1,637,613
COLUMN TOTALS		9,040	\$ 1,560,790	\$ 46,824	\$ 30,000	\$ 1,637,613

Exhibit L
Off Ramp ESDC Scope of Work

City of Stockton Municipal Utilities Department
Progressive Design–Build Services
Regional Wastewater Control Facilities Project

July 25, 2016

Task 9 – Second Phase 1 Off-Ramp (Optional)

This task, which includes all engineering services during construction requested in Appendix C of the RFP. The overall intent of this task is to provide technical assistance during construction to allow Facilities completion in accordance with design documents

AECOM/WML will provide engineering services during construction in coordination with the City designated Construction Manager. An on-site AECOM construction resident is not included in the current pricing but will be considered if this optional task is implemented.

Construction management by City designated construction manager, which will be in charge of construction quality control testing, furnishing of fabrication drawings, shop drawings and other construction submittals, processing and approval of contractor payment applications and change orders.

SCADA system integration and programming is not part included in the scope of this task. However, AECOM/WML will review the work of the General Contractor and/or System Integrator in this regard.

This task is broken down into the following sub tasks:

Sub Task 9.1 – Project Management

Objective: Provide additional project management services for coordination activities, project records and documentation, meetings, and day to day communication associated with Phase 1 Off-Ramp services.

AECOM/WML Activities: Prepare an updated schedule of work products, project management plan as necessary and extend project management activities for the duration of the First Phase 1 Off-Ramp.

Deliverables: Invoices and meeting minutes

Key Understanding: The project manager will be responsible for coordination, organization, control, monitoring, and reporting of activities associated with Phase 1 Off-Ramp services.

Information and Services Provided by Others: Construction management will be the responsibility of a City appointed Construction Manager.

Sub Task 9.2 – On-Site Meetings and Observations

Objective: Provide basic on-site engineering support during construction activities

AECOM/WML Activities: Periodically visit the construction site to assist in checking work quality and resolving field issues. Participate in substantial completion inspection and punch-list preparation.

Deliverables: None - documentation of visits (observations, punch lists etc.) to be recorded by the City's on-site construction representatives.

Meetings/Travel: Twice monthly site visits for 48 months by a local AECOM engineer.

Information and Services Provided by Others: None

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Sub Task 9.3 – Submittal Reviews

Objective: Ensure products propose by General Contractor meets the design intent of the contract drawings and specifications.

AECOM/WML Activities: Review General Contractor submittals, including shop drawings and O&M manuals, for conformance with the contract documents.

Deliverables: Written reviews to submittals and resubmittals.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to provide information to review and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.4 – Requests for Information

Objective: Provide technical support to answer requests for information (RFIs).

AECOM/WML Activities: Answer questions, provide written interpretations of the requirements of the contract documents, and evaluate the acceptability of substitute materials and equipment.

Deliverables: Written responses to RFIs.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to route RFIs and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.5 – Design Change Notices and Change Orders

Objective: Provide technical support to modify original design based on new findings or proposed change orders.

AECOM/WML Activities: Prepare Design Change Notices (DCNs - additional details, working drawings and specifications) as necessary. Review potential change orders and advising City as regards validity and value.

Deliverables: DCNs packages and written reviews of potential change orders.

Key Understanding: Level of effort limited to the budget included in the proposal for this subtask.

Meetings/Travel: None

Information and Services Provided by Others: City's construction manager to route RFIs and administer the document workflow between General Contractor and AECOM for this task.

Sub Task 9.6 – Facilities Start-up and Testing

Objective: Provide technical support during facilities start-up and testing.

AECOM/WML Activities: Assist with facilities start-up and testing in accordance with the start-up and testing plan and addressing operational and performance issues identified during start-up.

Deliverables: Report documenting activities and findings.

Key Understanding: One month of on site assistance by AECOM's operations specialist.

Meetings/Travel: Weekly traveling and expenses for AECOM's operations specialist. Weekly site visits by Design Manager or Process Manager.

Information and Services Provided by Others: None.

Sub Task 9.7 – Training Assistance

Objective: Provide technical support to train staff on how to operate facilities.

AECOM/WML Activities: Provide technical training to plant staff on how to operate facilities per the training plan previously developed.

Deliverables: To be refined based on final training plan requirements (see "key understanding").

Key Understanding: Level of effort will depend on the final training plan requirements. Thus, initially, level of effort is then limited to the budget included in the proposal for this subtask.

Meetings/Travel: To be determined based on final training plan.

Information and Services Provided by Others: None.

Sub Task 9.8 – Operations and Maintenance Manual (O&M)

Objective: Provide a document that describes the operation and maintenance of all the improvements constructed as part of this project.

AECOM/WML Activities: Prepare operations and maintenance manuals based on Standard Operations Procedures (SOPs) and vendor manuals provided by General Contractor.

- Four hardcopies of O&M Manual
- Four CDs containing PDF files O&M Manual

Key Understanding: General Contractor to organized and provide vendor manuals from submittals.

Meetings/Travel: None.

Information and Services Provided by Others: None.

Sub Task 9.9 – Record Drawings

Objective: Document changes to conformed drawings.

AECOM/WML Activities: Produce record drawings with construction-phase documentation provided by General Contractor.

Deliverables:

- Four half size sets design record drawings
- Four sets of record specifications
- Four CDs containing PDF files of record design drawings and specifications

Key Understanding: General Contractor to provide clear and organized markups of all changes to be reflected in the record drawings. Up to 12 months allowed for completion of record drawings after substantial completion acceptance.

Meetings/Travel: None.

Information and Services Provided by Others: None.

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Exhibit M

Off-Ramp ESDC Cost

City of Stockton Municipal Utilities Department Progressive Design–Build Services

Regional Wastewater Control Facilities Project

July 25, 2016

Second-Off Ramp (ESDC) Fee:

\$3,752,000 Lump-sum

DRAFT



Submitted to
City of Stockton
Municipal Utilities Department

EXHIBIT N

Phase 2A Engineering & Design Services Scope of Work
City of Stockton Municipal Utilities Department
Progressive Design Build Services
Regional Wastewater Control Facility Modifications Project

January 22, 2019

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Acronyms

AECOM/WML	AECOM/W. M. LYLES JOINT VENTURE
ATC	Authority to Construct
BDR	Basis of Design Report
BNR	biological nitrogen removal
CCC	chemical addition, dual media tertiary filtration, disinfection by chlorination using a disinfection channel
CIEMP	Capital Improvement and Energy Management Plan
City	City of Stockton
CPM	critical path method
CPM	Critical Path Method
DMS	Document Management System
EIR	Environmental Impact Report
ESDC	Engineering Services during Construction
MUD	Municipal Utilities Department
NPDES	National Pollutant Discharge Elimination System
NTP	Notice to Proceed
O&M	Operations and Maintenance
PG&E	Pacific Gas & Electric Company
Project	Regional Wastewater Control Facility Modifications Project
PTO	Permit to Operate
QA/QC	Quality Assurance/Quality Control
QMP	Quality Management Plan
RWCF	Regional Wastewater Control Facility
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Controls and Data Acquisition
UV	Ultraviolet
WWTP	Wastewater Treatment Plant

Introduction

As requested by the City of Stockton (City), AECOM/W. M. LYLES JOINT VENTURE (AECOM/WML) has developed a scope of services for the engineering and design services required in Phase 2A for the progressive design-build services for the Regional Wastewater Control Facility Modifications Project (Project). Phase 2A includes engineering and design services up to a 90-percent completion.

Background

The City owns and operates the Regional Wastewater Control Facility (RWCF), which provides sewerage service for the City of Stockton, Port of Stockton, and surrounding unincorporated areas of San Joaquin County. The RWCF is located at 2500 Navy Drive in Stockton, with facilities situated on both the eastern and western banks of the San Joaquin River.

The existing RWCF includes the following four treatment areas: Main Plant, facultative ponds, engineered wetlands, and the Tertiary Plant. The Main Plant includes all the treatment facilities on the eastern bank of the river. The Tertiary Plant includes all the treatment facilities on the western bank of the river. The plants are connected by a bridge over the River.

The Main Plant receives wastewater flows from the surrounding communities and provides screening, grit removal, raw sewage pumping, primary sedimentation with chemical addition, biological treatment with biotowers, secondary clarification, and secondary effluent pumping.

Additional secondary treatment and storage can be provided using the facultative ponds. Secondary and tertiary treatment is also available in the adjacent engineered wetlands. The use of the ponds and wetlands for treatment or diversion past the ponds and wetlands are optional flow paths dependent on a variety of operational factors. Effluent from the ponds, wetlands, or diversion structures (as applicable) is then routed to the Tertiary Plant.

The Tertiary Plant provides ammonia removal using nitrifying biotowers, dissolved air flotation with chemical addition, dual media tertiary filtration, disinfection by chlorination using a disinfection channel (CCC), and dechlorination prior to discharge to the San Joaquin River via a siphon to a submerged open pipe outfall.

The Main Plant also provides solids handling for the solids generated by the primary and secondary sedimentation processes. Solids are either routed to gravity thickeners, gravity belt thickeners or pumped to the anaerobic digesters directly. After anaerobic digestion, sludge is pumped to a holding tank. Digested solids are removed from the lagoons by a dredge or pumped directly to holding tanks where they are further conditioned and dewatered using belt filter presses. Dewatered solids are hauled off-site by a private contractor and routinely recycled on agricultural lands as a source of nutrients and soil amendment. In an emergency, solids can be used as daily cover for solid waste at the landfill.

Many of the facilities of the existing RWCF include dated technologies and have aging equipment and infrastructure, which will not be able to accommodate future treatment demands and meet regulatory requirements. Because of this, the City has embarked in a program to significantly upgrade the RWCF. These upgrades will be implemented to specifically address the following issues:

1. More Stringent Regulatory Limits. The RWCF must meet new nitrate and nitrite nitrogen discharge limits by June 1, 2024. A biological nitrogen removal (BNR) process needs to be incorporated into the treatment train.
2. Need for Increased Capacity. The CIEMP forecasts a 60 percent increase in influent flow and loadings by 2035.
3. Aging Infrastructure/Outdated Technologies. Most of the unit processes in the plant range in age from 40 to 70 years, and in some cases are well past their useful operational life or rely on outdated technologies. Rehabilitation or replacement is necessary to ensure an efficient, reliable, and safe operation.

4. **Need for Better Control Systems.** Control rooms are scattered around the facility and SCADA monitoring is incomplete, making operations less efficient. A centralized control/operations center with a comprehensive Supervisory Controls and Data Acquisition (SCADA) system is needed to make plant operations more efficient.
5. **Personnel and Stores Facilities.** The treatment plant has grown in size, complexity and age over the years and this has resulted in increases in the City operations, maintenance and engineering staff as well as additional storage needs. However, personnel facilities including laboratory space, offices, locker rooms, and the like, have not kept pace. Also, the current Stores Building needs to be relocated to the Main Plant for safety reasons due to recent lane expansions in Navy Drive. Thus, new modern facilities are needed to accommodate these functions.

Project Objective

The goal of the RWCF Modifications Project (formerly known as Progressive Design-Build Project) is to plan, design and construct wastewater treatment plant facilities that are able to meet current regulatory treatment objectives and balance future potential regulatory requirements for most conditions in a cost-effective manner while extending the life of existing assets within the budget available.

Project Description

The type and extent of the improvements included in the Project have been detailed in the AECOM/WML Phase 2 Proposal, Final Basis of Design Report (BDR), 60 percent drawings, equipment specifications, and associated appendices submitted as final deliverables for Phase 1.

Progressive Design Build Approach Implementation

The City is implementing the project on a progressive design-build basis. This approach involves bringing design and construction resources together in an integrated team to manage the project in a competitive manner but with a single-source responsibility and accountability. This approach is broken down into two distinct phases:

Phase 1 Services – Planning, Design Development, Permitting and Preparation of the Design Build Price.

This phase included all the planning, engineering, and permitting to prepare a BDR and sufficient plans, specifications and other supporting documents to develop a Design-Build price and schedule for Phase 2.

Phase 1 was completed in January 2019.

Phase 2 Services– Project Execution. Upon agreement on the design-build price for the project, negotiations, preparation of appropriate agreements, approval by City Council, and the release of required approvals, AECOM/WML will proceed with Phase 2, in which final design details will be completed, and equipment and material procurement, construction, engineering design support during construction, construction management, start-up, and acceptance testing will be carried out.

To expedite the execution of this project, the city has decided to split Phase 2 into the following Phases:

Phase 2A – 90 Percent Design (Scope included in this “Exhibit N – Phase 2A - Engineering and Design Services”)

This phase includes all the activities required to further develop the project design for construction of the facilities included in this project to a 90 percent design level. This phase encompasses project management activities, construction plans (e.g., quality management and safety program plans), additional field investigations, permitting, calculations, drawings, and specifications.

Phase 2B – Final Design and Engineering Services during Construction (Scope included in “Exhibit E (Revised) – Phase 2B - Final Design and Engineering Services during Construction (ESDC) Scope of Services”).

This phase includes completing the final design for this project (final design) as well as all engineering services during construction (post-design).

Phase 2B – Construction Management Services (Scope included in “Exhibit E (Revised) – Phase 2B - Final Design and Engineering Services during Construction (ESDC) Scope of Services” in contract for this project)

This phase includes all procurement, construction, construction management and field engineering services (e.g., safety, quality control) necessary to build the project and provide the necessary training, and startup and testing for final acceptance.

Phase 2A – 90 Percent Design

All engineering services included in Phase 1 have been completed. The scope described below includes the services for Phase 2A.

As part of Phase 2A, AECOM/WML will complete the design produced during Phase 1 of this project and issue drawings and specifications to a 90-percent level of completion.

The scope of work for Phase 2A is organized into five tasks as follows:

- Task 1 – Project Management
- Task 2 – Supplemental Studies
- Task 3 – Field Investigations
- Task 4 – Permitting
- Task 5 – 90 Percent Design

A detailed description of these tasks is provided in the following subsections.

Task 1 – Project Management during Final Design

Objective: The overall objective of this task is to ensure on-time and on-budget progression of all Phase 2A tasks according to the scope, fluid and coordinated communication with City staff, adequate project controls, and quality of all deliverables.

AECOM/WML Activities: See sub tasks as outlined below:

Deliverables: See sub tasks as outlined below:

Key Understanding: AECOM/WML Project Manager and Design Manager will be responsible to the Project Manager for the City of Stockton Municipal Utilities Department.

Meetings/Travel: In general the AECOM/WML DB Project Manager and Design Manager will attend progress review meetings in person or by video conference in accordance with the schedule described in 1.3 below. Others to attend as needed.

Information and Services Provided by Others: City to provide timely feedback on all deliverables including meeting agenda and meeting minutes, updated schedules, and progress reports. City to coordinate information requests from third parties including its consultants, stakeholder groups, and City council.

Sub Task 1.1 – Schedule of Work Products

AECOM/WML Activities: Prepare a listing and schedule of work products requiring City review within 30 calendar days of Phase 2A Notice to Proceed. Include a two-week review period for each submittal, and draft and final submission dates as applicable.

Deliverables: Word or Excel versions of draft Schedule of Work Products for review and comment by City staff, and a PDF of final Schedule of Work Products.

Sub Task 1.2 – Updated Project Management Plan

AECOM/WML Activities: Update the Project Management Plan within 45 calendar days of Phase 2A Notice to Proceed. This document will contain any updates to include the Phase 2 Scope of Services, project team organization, project communications protocol, directory of addresses and telephone numbers for project team members, updated Quality Assurance/Quality Control (QA/QC) program, preliminary critical path method (CPM) schedule for Phase 2A and Phase 2B activities, and document control procedures. Because few changes are anticipated, the revised plan will be issued in final form.

Deliverables: One unbound original set, four bound copies, and PDF of the final Updated Project Management Plan.

Sub Task 1.3 – Progress Review Meetings

AECOM/WML Activities: Schedule and conduct monthly leadership meetings and additional bi-weekly design review meetings with City and City's representatives at MUD offices or by video conference calls with equipment provided at the Municipal Utilities Department (MUD) Safety Training Room by AECOM/WML. Generate and distribute meeting minutes for each meeting. Distribute meeting agendas at least one business day prior to each meeting date. Other documents requiring City review prior to the meeting will be submitted at least one week in advance.

Deliverables: Meeting agendas and meeting minutes.

Sub Task 1.4 – Schedule Updates

AECOM/WML Activities: Update Phase 2 schedule monthly, comparing actual progress to the originally proposed schedule and key milestones achieved.

Deliverables: PDF of updated schedule.

Sub Task 1.5 – Monthly Payment Requests and Progress Reports

AECOM/WML Activities: Prepare monthly invoices in accordance with actual progress and schedule of values and a monthly progress report to accompany each invoice for the previous month's work. Progress reports will review major work activities and schedule by task, and document progress made during the past month, accomplishments, critical items requiring action or resolution, and a look-ahead to the next month's progress goals.

Deliverables: PDF of monthly invoices and monthly progress reports.

Sub Task 1.6 – QA/QC Program

AECOM/WML Activities: Institute and maintain a QA/QC program for Phase 2A in accordance with the updated Quality Management Plan (QMP) developed and approved in Phase 1 to be consistent with Phase 2A and 2B scope. To ensure objectivity, senior members of the AECOM/WML's project team who are not directly involved in the project will perform QA/QC for each engineering work product prior to submission to the City.

Deliverables: QA/QC program description included in QMP. QA/QC review comments and QA/QC documentation available upon request.

Sub Task 1.7– Safety Program

AECOM/WML Activities:

Develop a safety program for all activities included in Phase 2. The safety program will be a written program which will cover safety aspects required in GENERAL CONDITIONS Section (0700) and CONSTRUCTION FACILITIES AND NECESSARY CONTROLS Section (01500) of the contract documents.

AECOM/WML will staff the project with qualified staff to implement and enforce the safety program as appropriate for the different stages of the project, including a Safety Supervisor during construction under Phase 2B.

Deliverables: Written safety program

Sub Task 1.8 – Document Management System (DMS)

AECOM/WML Activities: In addition to maintaining an internal filing system for all project-related documents, continue to maintain an internet-based electronic DMS using a SharePoint platform to provide uploading and retrieval of project-related documents for project team members and appropriate City staff. Pertinent documents uploaded into the DMS will include letters, memoranda, reports, meeting handouts and minutes, presentations, calculations, drawings, specifications, invoices and other appropriate written or graphical documents related to the project. Provide links and search functions indicating where the documents are located within the DMS.

Deliverables: Continuation of an Internet based DMS (SharePoint Site – already in operation from Phase 1)

Sub Task 1.9 – Decision Log

AECOM/WML Activities: Provide and maintain an updated decision log to both document key decisions that have been made and outstanding decisions that have yet to be made.

Deliverables: Excel spreadsheet of updated decision log available in SharePoint Site.

Task 2 – Supplemental Studies and Alternative Analyses

Objective: Conduct supplemental studies and or alternatives analyses as requested by the City

AECOM/WML Activities: Engineering studies and analyses to optimize the scope for this project. These activities may include calculations, sketches, drawings, meetings, and memoranda to document activities performed under this task.

Deliverables: As agreed with the City within the limits of the City allowance allocated for this task (\$250,000 included in Exhibit O (Phase 2A – Engineering and Design Services Cost), under Total AECOM/WML expenses.

Key Understanding: As requested by the City, this task will be funded within the \$250,000 allowance allocated for this task. The specific scope and fee for any activity conducted will be agreed with the City prior to the initiation of any work under this task. The following activities have been initially discussed with the City and served as the basis for this allowance:

Activity	AECOM/WML	Subs	Total	Deliverable
Existing Headworks Rehabilitation Scope and Design (per Jeff Pelz email on 10/19/18)	\$50,000		\$50,000	Written Scope of Work and Cost Estimate. Design of Improvements

Condition Assessment of 36" and 60" pipelines under San Joaquin River and Hydraulic Capacity Evaluation	\$20,000	\$50,000	\$70,000	Short Letter Memo and Report from Subs
Alternative Analysis and Redesign of Final Effluent Pump Station	\$30,000		\$30,000	Short Letter Memo and Redesign of Phase 1 Drawings
Alternative Analysis and Redesign of Diversion Pump Station	\$25,000		\$25,000	Short Letter Memo and Redesign of Phase 1 Drawings
Condition Assessment of Primary Clarifiers 3 and 4 and 7 and 8	\$5,000	\$25,000	\$30,000	Report from Sub
Other Studies or Analysis Requested by the City	\$25,000	\$20,000	\$45,000	TBD
TOTAL	\$155,000	\$95,000	\$250,000	

Meetings/Travel: As needed to complete the scope agreed with the City for the studies defined.

Information and Services Provided by Others: City will provide necessary information and input to complete the activities for this task.

Task 3 – Field Investigations

Objective: Collect surveying and utility location information to supplement existing information developed during Phase 1 and fill information gaps to assist on final design. Survey Administration Building for asbestos.

AECOM/WML Activities: Perform additional surveying activities to confirm structure elevations as well as potholing activities to verify location of buried infrastructure.

The horizontal and vertical coordinate system and data will be based on the North American Datum of 1983 (NAD83) converted to the California Grid Coordinate System of 1983, Zone 3 (CA83111-F) as referenced by the City of Stockton Horizontal Control System. The vertical datum will be based on the North American Vertical Datum of 1988 (NAVD88) as referenced by available City of Stockton "Benchmarks, Elevations, and Descriptions" (January 2011 Conversion to NAVD88).

Potholing will be conducted in certain project areas if necessary to locate buried infrastructure, verify as-built locations, and determine existing utility locations. All potholing locations will be pre-marked in the field and reviewed with City engineering and operations staff prior to excavation.

Perform asbestos survey in existing Administration Building.

Deliverables:

- All collected survey data (point file and notes) and potholing data will be provided to the City in CAD format. Information collected in this task will be incorporated into the final design drawings.
- Report from subcontractor in charge of Asbestos Survey in Administration Building

Key Understanding: The extent and scope of the surveying and utility location work will be based on the 60 Percent Drawings submitted in Phase 1. This task does not include existing pipe inspections or structural or any other type of condition assessments.

Meetings/Travel: A representative from AECOM/WML will travel to the Stockton site to coordinate the survey, potholing, and asbestos subcontractors, which will mobilize the necessary staff and equipment to conduct their work.

Information and Services Provided by Others: City to provide input including available information on existing utilities and infrastructure prior to any potholing activity. City to provide access to Administration Building for asbestos survey.

Task 4 – Permitting

Objective: Produce a schedule for the permits necessary to build and operate the proposed improvements at the RWCF and prepare preliminary applications for the specific permits described below.

AECOM/WML Activities:

Prepare a permitting schedule for obtaining the permits to construct and operate the facilities included in this project.

Prepare the necessary documentation and forms to apply on behalf of the City to obtain the following permits that will be needed to build the improvements proposed:

San Joaquin Valley Air Pollution Control District

- Standby Generators Authority to Construct (ATC)
- Wastewater Treatment Plant (WWTP) Process Modifications ATC

City of Stockton

- Building Permits for Personnel and Stores Buildings (includes Fire Marshall requirements)

AECOM/WML will also provide information for the City's Construction Traffic Management Plan (a mitigation measure in the Draft Environmental Impact Report [EIR]).

Deliverables: Five hardcopies and PDF of draft permitting schedule for review and comment by City staff, and five hardcopies and PDF of final schedule. Draft applications for permits listed above.

Key Understanding:

- AECOM/WML will provide preliminary preparation of the above permit applications and facilitation of regulatory agency approval of the permits listed above.
- Applications to secure these permits will be finalized in Phase 2B during final design. At this time, City will sign permit applications, pay all permit application fees (AECOM/WML will pay and City will reimburse AECOM/WML), and attend permitting coordination and review meetings with regulatory agencies as necessary.
- AECOM/WML will file these applications on behalf of the City in Phase 2B.

- As stated in the contract, City will maintain a lead role with the RWQCB and the San Joaquin Valley Air Pollution Control District.
- Stormwater and dewatering permits are not required or included as these discharges will be directed to the ponds.
- AECOM/WML will secure OSHA permits necessary to build this project is also included in Phase 2B.
- AECOM/WML will obtain construction related permits, or equivalent, such as Construction Storm Water General Permit, Dewatering Permit prior to construction.

Meetings/Travel: AECOM/WML permitting lead to attend up to 4 meetings and conference calls as needed.

Information and Services Provided by Others: City to provide copies of all relevant existing permits including National Pollutant Discharge Elimination System (NPDES) and air permits, plus communications with RWQCB, San Joaquin Valley Air Pollution Control District, and any other agency that can have a potential impact on the design and construction of this project.

Task 5 – 90 Percent Design

Sub Task 5.1 – Procurement of Engineering Services from Selected Vendors

Objective: Select the equipment for the main process areas and procure engineering services from vendors to expedite production of shop submittals and facilitate timely production of final design.

AECOM/WML Activities: Early in Phase 2A work with the City to select suppliers for the following process equipment that will be ultimately used for the main process areas:

- Fine Screens
- Raw Wastewater Pumps
- Grit Removal System
- Primary Clarifiers
- Aeration Diffusers and associated equipment
- Aeration Blowers
- Secondary Clarifiers
- Disk Filters
- Ultraviolet (UV) Disinfection System
- Final Effluent Pumps
- Dewatering Centrifuge
- Sludge Cake Conveyors

Provide vendor quotations and feedback, and issue contracts to vendors for equipment listed above to prepare and submit shop drawings and other engineering information necessary for the final project design.

At the City's request, this subtask has been broken down as follows:

Subtask 5.1a: Includes working with the City to select the equipment above using up to two collaboration meetings and gathering technical information in addition to the information provided in Phase 1 to fill gaps necessary to select the equipment. This effort also includes determining specific terms and conditions to be requested to the selected equipment vendors (warranty terms, spare parts, training). As agreed with the City, this task is a lump sum effort (\$30,000).

Subtask 5.1b: Includes issuing contracts to selected vendors to prepare shop submittals, answer vendor questions, and review and approval of shop submittals.

Deliverables: Log of selected equipment (Task 5.1a) and vendor quotations and approved shop submittals in electronic form in SharePoint (Task 5.1b).

Key Understanding: Typically, engineering services from selected vendors would occur during Phase 2B. However, AECOM/WML recommends obtaining these vendor engineering services during Phase 2A. The amount of \$750,000 is included in the Phase 2A budget to procure these services in lieu of including these services in Phase 2B. This cost represents approximately 5 percent of the estimated capital purchase cost of the above equipment.

Meetings/Travel: Up to two meetings with City to conduct final equipment selection.

Information and Services Provided by Others: City's input on preferred equipment within 30 calendar days of NTP for Phase 2A.

Sub Task 5.2 – 90 Percent Design, Construction Schedule and Guaranteed Maximum Price (GMP) Update

Objective: Prepare the 90 percent design submittal for all facilities included in this project.

AECOM/WML Activities: Prepare 90 percent design submittal consisting of plans and specifications conforming to the applicable industry codes and standards and contract documents. The designers, checkers, and the design manager names will be included in the drawing title blocks and on the cover sheet of the specifications indicating that appropriate QA/QC checks have been performed.

The 90 percent design submittal shall be substantially complete with only minor design work remaining and shall incorporate all City comments to date. The 90 percent submittal shall also provide other details for construction of the project and will serve as a "check" to determine that the City's comments provided on the 60 percent submittal were incorporated. It is intended as the last submittal requiring City review and comment. Following the 90 percent submittal review, the City will provide consolidated comments as drawing markups and itemized written comments, prepared as a stand-alone fashion in a comment log (spreadsheet provided to City by AECOM/WML). AECOM/WML will respond to each comment and submit the responses to the City.

If appropriate and beneficial to the project, AECOM/WML will submit an "Early Works Package" design submittal for portions of the improvements which may be constructed ahead of the design completion for the other elements of the project.

Prepare a preliminary CPM schedule for construction, incorporating weather-related delays and any seasonal restrictions imposed by regulatory agencies, and submit schedule to City with 90 percent design submittal.

Provide updates to the GMP and backup material related to scope changes that occur during the 90% design. Deliverables:

- 90 percent design drawings and specifications:

- Five half size sets of 90 percent design drawings
- Five sets of 90 percent specifications
- One memory stick containing PDF files of 90 percent design drawings and specifications
- Five bound hardcopies and memory stick with PDF of 90 percent construction schedule
- 90 percent design review workshop including workshop organization, preparation of agenda, attendance, and preparation and distribution of workshop summary.

Key Understanding:

- Alternative analysis or other studies modifying the facilities proposed in the Phase 2 proposal (60 percent) drawings are not included in this task. Only further development of the details for the design proposed in Phase 1.
- Final selection of process equipment early in the Phase 2A design process will be critical to maintaining the project schedule. It is critical the City provides input and facilitate final equipment selections early in this process.
- Due to the collaborative nature of the Phase 1 design development it is anticipated that the number of City comments on the 90 percent submittal will be reduced. The 90 percent submittal will be the last design submittal for City review prior to documents "Issued for Construction" (See Phase 2B scope).

Meetings/Travel: A full-day meeting to review the 90 percent design comments. AECOM/WML project management team will attend with discipline specialists available as necessary by video conference.

Information and Services Provided by Others: City's input on equipment selection and comments on 60 percent design submittal and any post 60 percent submittal comments.

Scope Clarifications

To the extent that deviations from these clarifications cause price and/or schedule impacts, AECOM/WML will be entitled to an equitable adjustment of price and/or schedule from the City:

1. The City will issue the Phase 2A Notice to Proceed (NTP) no later than April 30, 2019.
2. Our proposal assumes that final selection of all process mechanical equipment will be completed within 30 days of the Phase 2A NTP. Delay in selection of the major mechanical process equipment will impact the preparation of vendor shop drawings and the completion of detailed design. To that end we are willing to begin discussing the final equipment selections in advance of the Phase 2A NTP to help maintain the schedule.
3. The 90 percent submittal is intended as the last submittal requiring City review and comment. Following the 90 percent submittal review, the City will provide consolidated comments as drawing markups and itemized written comments in a comment log (spreadsheet provided to City by AECOM/WML). AECOM/WML will respond to each comment and submit the responses to the City.
4. Unless specifically indicated, this scope does not include condition assessment studies, additional subsurface studies, alternative analyses or any design efforts intended to modify the design presented in the 60-percent drawings attached as Appendix N to the Final Basis of Design Report.

5. Retention will be 5 percent, which is in accordance with California PCC §10261.
6. In accordance with the Phase 1 Decision Log, work associated with designing to or obtaining LEED, Envision, or other third party certification or compliance is not included. However, the City has decided that the Administration Building shall be designed and constructed in accordance with LEED Silver Certification requirements. All design and construction work associated with the LEED requirements will be handled as a scope change to the GMP.
7. Design costs for unforeseen upgrades, above and beyond what could have reasonably been anticipated by the designer, to existing structures or buildings to comply with National Fire Protection Agency, ADA, or Title 24 energy code requirements triggered by electrical or renovation work in existing facilities is not included. While we have done a significant amount of due diligence on the issue, interpretation of the code requirements is up to the judgment of the responsible building department inspector and accordingly will not be determined until final design is complete. We suggest that the City establish an allowance for this type of work.
8. Preparation of the permit applications as described in this scope of work is included. It is assumed that the City will sign all local, state, & federal permit applications, reimburse AECOM/WML for permit application fees, submit applications, and attend permitting coordination and review meetings with regulatory agencies as necessary.
9. No re-zoning, easements, or rights of way are assumed to be required.
10. Except for the Operations Building and the Maintenance and Collections Building, all work involving rehabilitation or re-purposing of existing structures does not include engineering to bring up the structure to current seismic requirements.
11. For the existing Administration Building (i.e., the Operations Building) and the Maintenance and Collections Building, engineering to analyze compliance with current seismic standards is in the scope, including determining if the building retrofit designs will trigger code requirements to seismically upgrade one or both buildings. Engineering design and drawings to remediate seismic deficiencies are not in the scope as these deficiencies need to be identified in the seismic analyses first.
12. The design basis UV transmittance (UVT) and dose for the proposed ultraviolet disinfection system are 65 percent and 100 mJ/cm², respectively. NWRI guidelines for conventional filter media such as the disk filters selected for this project typically recommend a 55 % transmittance design basis. However, based on performance of this type of filters in other facilities, seven months of UV transmissivity monitoring (March to October 2014) after the existing RWCF tertiary treatment (which showed a 10th percentile %UVT of 67%), the designer recommended and the City agreed that the UV system would be designed using a 65 percent UV transmittance in order to achieve cost savings for the City.
13. Contractor is entitled to rely on the accuracy of any City-furnished information used to develop the design or otherwise provided to the Contractor during Phase 1 of the Project.
14. During the Phase 2A work, City will provide a list of currently functional I/O to be incorporated into the new SCADA system and a list of equipment that will be taken out of service. I/O for equipment that will not remain in service will not be connected to the new SCADA system. The scope of work does not include repair of existing instrumentation wiring or equipment beyond what is indicated in the 60% design documents.
15. The full requirements of the local fire department for the fire protection systems at the facilities will be established during the Phase 2B final design. Therefore, the fire protection design is based on our experience at similar facilities and considering local fire codes and preliminary information exchanges with Fire Marshall. Fire protection systems materially different than those included in the current design are not included.

16. Other than those specifically identified in the 60 percent design drawings submitted at the conclusion of Phase 1, the proposed improvements do not include any provisions for additional odor control facilities or equipment.
17. An allowance of \$250,000 has been included at the City's request for Supplemental Studies and Alternatives analysis. Scopes and level of effort associated with the items described above under Task 2 will be determined after the NTP for Phase 2A. Unused portions of the allowance will be removed from the GMP.
18. AECOM/WML assumes that with the completion of Phase 1 and execution of the Phase 2A amendment, the original Request for Proposals (RFP) in the contract documents will be considered as the lowest in the order of precedence of Contract Documents.
19. This project does not include any level of effort associated with flood control. Studies, calculations, specifications, drawings or physical improvements associated with this subject are not in the scope of this project.
20. Arc flash study to be provided only includes gear that is being modified, replaced, and/or provided new within the scope of work indicated on the drawings. This type of study will be conducted as part of Phase 2B.

EXHIBIT O (NEW) - PHASE 2A ENGINEERING AND DESIGN SERVICES COST

Client City of Stockton MUD

Project RWQCFModifications

Task No.	Task Description	Total AECOM Labor Hours	Total AECOM/WML Labor (\$)	Total AECOM/WML Expenses (\$)	Subs (includes 10% Markup) (\$)	TOTAL Cost (\$)
1	PROJECT MANAGEMENT (TASK 2A ONLY)					
1.1	Schedule of Work Products	19	\$4,588	\$138	\$ -	\$ 4,725
1.2	Updated Project Management Plan	122	\$38,551	\$1,157	\$ -	\$ 39,707
1.3	Progress Review Meetings	617	\$194,257	\$27,848	\$ -	\$ 222,104
1.4	Schedule Updates	45	\$9,440	\$283	\$ -	\$ 9,723
1.5	Monthly Payment Requests and Progress Reports	559	\$196,923	\$5,908	\$ -	\$ 202,831
1.6	QA/QC Program	296	\$110,009	\$3,300	\$ -	\$ 113,309
1.7	Safety Program	90	\$25,475	\$764	\$ -	\$ 26,239
1.8	Document Management System (DMS)	698	\$173,635	\$5,209	\$ -	\$ 178,844
1.9	Decision Log	98	\$34,263	\$1,028	\$ -	\$ 35,291
	Subtotal Task 1	2,544	\$ 787,140	\$ 45,634	\$ -	\$ 832,774
2	SUPPLEMENTAL STUDIES					
2.1	Supplemental studies and Investigations	0	\$150,000	\$0	\$ 100,000	\$ 250,000
	Subtotal Task 2	0	\$ 150,000	\$ -	\$ 100,000	\$ 250,000
3	FIELD INVESTIGATIONS					
3.1	Surveying	36	\$8,076	\$300	\$ 11,000	\$ 19,376
3.2	Potholing	28	\$6,508	\$300	\$ 11,000	\$ 17,808
3.3	Asbestos Survey in Operations Building	16	\$3,715	\$300	\$ 5,500	\$ 9,515
	Subtotal Task 3	80	\$ 18,300	\$ 900	\$ 27,500	\$ 46,700
4	PERMITTING					
4.1	Permitting	444	\$81,864	\$5,456		\$ 87,320
	Subtotal Task 4	444	\$ 81,864	\$ 5,456	\$ -	\$ 87,320
5	90 PERCENT DESIGN					
5.1	Procurement of Engineering Services from Vendors	1,598	\$326,591	\$9,798	\$ 750,000	\$ 1,086,389
5.2	90 Percent Design, Construction Schedule, And Cost Estimate	20,228	\$3,127,824	\$54,020	\$ -	\$ 3,181,844
5.3	W.M. Lyles	0	\$156,750	\$0	\$ -	\$ 156,750
5.4	Kleinfelder (Structural)	0	\$0	\$0	\$ 127,710	\$ 127,710
5.5	Kleinfelder (Geotechnical)	0	\$0	\$0	\$ 33,000	\$ 33,000
5.6	Hydroscience	0	\$0	\$0	\$ 150,374	\$ 150,374
5.7	Clemson Engineering Hydraulics (Physical Models for IPS and FEPS	0	\$0	\$0	\$ 73,700	\$ 73,700
	Subtotal Task 5	21,826	\$ 3,611,165	\$ 63,818	\$ 1,134,784	\$ 4,809,767
COLUMN TOTALS		24,894	\$ 4,648,468	\$ 115,808	\$ 1,262,284	\$ 6,026,561

Stockton RWCF Modifications Project
SCHEDULE OF FEES Phase 2A and 2B
2019

No.	Classification	Hourly Billing Rate
Engineering		
1	Principal	\$375.00
2	Process Principal-in-Charge	\$370.00
3	Operations Manager	\$350.00
4	Project Manager IV	\$340.00
5	Project Manager III	\$315.00
6	Project Manager II	\$300.00
7	Project Manager I	\$276.00
8	Engineer IV	\$185.00
9	Engineer III	\$161.00
10	Engineer II	\$130.00
11	Engineer I	\$105.00
12	Architect II	\$240.00
13	Architect I	\$190.00
14	Procurement Specialist	\$180.00
15	Permitting Specialist	\$166.00
16	CADD Supervisor	\$195.00
17	CADD III	\$168.00
18	CADD II	\$135.00
19	CADD I	\$90.00
20	Quality Assurance Manager	\$315.00
21	Administrative Specialist	\$120.00
22	Clerical	\$75.00
Construction Management		
23	Construction Executive	\$170.00
24	Construction Manager / Division Manager	\$148.00
25	Senior Construction Project Manager / Senior Construction Estimator / Senior Scheduler	\$129.00
26	Construction Project Manager / Estimator / Scheduler	\$106.00
27	Construction Project Engineer / QC Engineer / Safety Engineer	\$93.00
28	Construction Field Engineer	\$81.00
29	Construction Engineering Assistant	\$63.00
30	Construction Operations Administrator	\$59.00
31	Construction Yardman	\$50.00
32	Construction Intern	\$41.00
33	Quality Inspector	\$165.00
34	Resident Engineer III	\$209.00
35	Resident Engineer II	\$170.00
36	Resident Engineer I	\$152.00
37	Safety Manager	\$176.00
38	Project Controls Specialist	\$205.00

Notes:

1. The hourly billing rates included in this schedule include payroll expenses, overhead, and profit.
2. Additional rates can be added as mutually agreed.
3. Rates are subject to change annually in July for items 23 to 32 and in January for all other items, consistent with AECOM/WMLyles's annual rate increase/decrease for California clients who are charged the most competitive rates, but with the allowable increase being no more than three percent in any single year.
4. Other Direct Costs (ODC's) , such as, travel, meals, lodging, project-specific supplies, printing, and third party subconsultants will be invoiced at cost plus 10 percent.
5. Mileage will be billed at the Federally-approved rate.

Exhibit P
Phase 2A Schedule

City of Stockton Municipal Utilities Department Progressive Design-Build Services
Regional Wastewater Control Facilities Modification Project

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LEGEND: AECOM/WML Task City of Stockton Review AECOM/WML Deliverable Meeting/Workshop with City Phase Summary AECOM/WML Submittal

EXHIBIT Q
GUARANTEED MAXIMUM PRICE

1. **Guaranteed Maximum Price ("GMP").** CITY shall pay for CONTRACTOR's performance under this Agreement the Cost of the Work provided, however, that the Cost of the Work shall not exceed the GMP of \$_____, as adjusted by Change Order/Directive in accordance with the Contract Documents. The GMP shall be the sum of the Phase 2A and 2B GMPs. The Cost of the Work shall include any and all of CONTRACTOR'S fee, margins, mark-ups, overhead, profit or other similar charges (collectively "Markups"). All such Markups shall be payable as part of, and not in addition to, the Cost of the Work as defined in Section 3 below.

2. **Shared Savings.** CONTRACTOR shall be compensated for actual work completed based on the Cost of Work not to exceed the amount of the GMP. If CONTRACTOR's actual total Cost of the Work is less than the GMP, upon Final Completion, the CONTRACTOR and the OWNER shall each be entitled to receive fifty percent (50%) of the GMP Savings. "GMP Savings" shall mean the positive difference, if any, when the actual total Cost of the Work is subtracted from the GMP; provided, however, that unused allowance monies, if any, shall not be subject to shared savings.

3. **Cost of the Work.** Cost of the Work consists of:
 - a. Phase 2A Engineering and Design Services: Time and Materials at Billing Rates Shown in Exhibit O.
 - b. Phase 2B Final Engineering and Engineering Services during Construction: Time and Materials at Billing Rates shown in Exhibit F
 - c. Phase 2B Construction Management Services: Time and Materials at Billing Rates shown in Exhibit H.
 - d. Phase 2B Construction Price: Actual Construction Cost plus 10% markup. Actual Construction Cost shall be comprised of the sum of all costs necessarily incurred and paid by the Contractor for the following categories of costs and expenses: :
 - i. Hourly Field Labor: The cost of all labor employed by Contractor in performing the Work shall include: wages, fringe benefits, government mandated payments (workers compensation insurance and SSI), travel and subsistence in accordance with hourly field rates shown on page Q-5.
 1. The Hourly Field Labor Rates will be adjusted during the Project whenever the prevailing wage rate determined by the Department of Industrial Relations for a worker classification changes. All changes to these rates must be submitted by the Contractor and approved by the City.
 2. All payments imposed by State and Federal Laws including, but not limited to, workers' compensation insurance, and social security payments. The rates used for workers' compensation

insurance shall be actual rates paid by the Contractor for each specific craft and broken down by wage rate if applicable to that craft.

3. Except as otherwise may be agreed to in writing by the City, the actual wages and benefits paid for manual classifications of Contractor's on-site workers will not, in the aggregate, be less than the current applicable wage for each classification as established by the State of California Director of Industrial Relations.
 4. Specifically prohibited from the labor costs are other payroll burden factors such as small tools and equipment (as defined below), bonuses of any kind and safety incentives.
 5. Contractor shall include the actual travel and/or subsistence costs, if any, as a separate line item under the labor cost category. Except as otherwise may be agreed to in writing by the City, the actual travel and/or subsistence costs will not be more than established in an applicable Master Labor Agreement or the State of California Director of Industrial Relations.
 6. Contractor will be paid actual cost of labor described above plus 9%.
- ii. Materials: The cost of all materials, including all factory testing, freight and delivery costs of materials, used in performing the work will be the cost to the Contractor from the supplier thereof. All discounts for early payment shall accrue to the Contractor unless the City's payment to Contractor is paid to Contractor before discount payment is due in which case discount savings will be fully credited to City on next progress billing. All rebates and all returns from the sale of surplus materials shall be credited to the Actual Construction Cost. Contractor will be paid actual invoiced cost of materials plus 3%.
 - iii. Construction Equipment: The initial Contractor Owned Equipment Rates approved for billing to the City are shown in the table below on page Q-6. All changes to these Equipment Rates must be submitted by the Contractor and approved by the City. The rates found in this table for equipment owned by the Contractor will, in all cases, be understood to cover all fuel, supplies, repairs, maintenance, ownership, and incidental costs and no further allowances will be made for those items, unless specifically approved in writing by the City. Equipment owned by Contractor will only be paid for the actual time equipment is used in performing work and will be rounded to the closest full hour if paid by an hourly rate. Contractor will be paid actual cost of owned equipment plus 9%.
 1. Equipment not owned by Contractor which is rented by Contractor and used in performing work will be paid by City based on actual invoiced cost to Contractor, plus actual fuel/lube costs,

provided the rental rate is not in excess of rental rates established by distributors or equipment rental companies in the local area. City-operated equipment will also be paid by City based on actual invoiced cost to Contractor provided the City does not deem any charges excessive. All transportation costs to move equipment on and off the Work will be paid by City up to a maximum of four (4) hours total travel time each way. Contractor will be paid actual cost of rented equipment plus 3%.

- iv. Subcontractors: The Contractor will be paid for all work performed by Subcontractor at the actual invoiced amount plus 3%.
- v. Bonds and Insurance: The Contractor will be paid the actual cost for the 100% payment bond and 100% performance bond, as well as the cost of all insurance costs required under Section 00820, plus 3%.
- vi. Direct Job Overhead Expenses: The Contractor will be paid for the actual cost of job overhead expenses which may include, but are not limited to, such expenses as office trailers, storage vans, temporary fencing/security, toilets, dumpsters, actual small tools used on the Project, waste removal, water, utility power, jobsite landline telephone costs, jobsite internet provider costs, wifi, reasonable room and board subsistence for employees who live farther than 40 miles from the Work Site or as required by California prevailing wage laws, copy machine, water cooler and any office furniture required for the Work needs, including mobilization and demobilization of same. There will be no warranty reserve. Cost of actual small tools used on the Project is limited to 2.5% of the sum of total hourly field labor plus owned equipment.
- vii. Taxes: The Contractor acknowledges it will be liable for all sales, use, gross receipts or other taxes, tariffs or duties related to the Work and that these taxes and tariffs are included in the GMP. All invoices to City will include the applicable taxes and tariffs that are the Contractor's responsibility and will not be shown as a separate line item on the Contractor's invoice.

4. Costs not to be Reimbursed

Items not included in Actual Construction Cost, and therefore not part of the Cost of the Work and not payable by City to Contractor:

- a. Salaries and other compensation of Contractor's personnel stationed at Contractor's principal office or offices other than the Site.
- b. Expenses of Contractor's principal office and offices, other than the Site office.
- c. Contractor's General Overhead and Expenses, except to the extent specifically allowed by Section 3.d above.
- d. The capital expenses of Contractor, including interest on capital employed for the Work and charges to Contractor for delinquent payments.

- e. Costs due to (a) the correction of Defective Work or the failure of Contractor or its subcontractors, suppliers or subconsultants of every tier to comply with the Contract Documents, (b) disposal of materials or equipment wrongfully supplied, or (c) making good any damage to property.
- f. Costs that would cause the GMP to be exceeded.
- g. Any cost not specifically and expressly described in section 3.d above.
- h. Any costs incurred after Owner's Final Acceptance of the Project.

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AECOM W.M. Lyles Co.
City of Stockton Municipal Utilities Department
Progressive Design-Build Services
Regional Wastewater Control Facility Modifications Project
Lyles Hourly Field Labor Rates

Craft	Classification	Base Wages	Fringes Plus Vacation	P/R Taxes, Insurance & Internal LDI Overhead	Straight Time Hourly Rate	OVERTIME RATES	
						Daily/Saturday Rate (1-1/2 X)	Sunday/Holiday Rate (2 X)
General Foreman by name							
General Foreman by name							
General Foreman by name							
General Foreman by name							
CARPENTER	Foreman						
	Journeyman - Leadman						
	Journeyman						
MILLWRIGHT	Foreman						
	Journeyman						
CEMENT MASON	Foreman						
	Journeyman-Leadman						
	Journeyman						
OPERATOR	Lg Crane-Gp 2A (Over 45 tn to 100 tn)						
	Backhoe/Excavator (Group 3)						
	Crane (Group 3A) (45 Ton & under)						
	Loader (Group 4)						
	Compactor (Group 5)						
	Boomtruck (Group 7)						

Construction Equipment Rates

DESCRIPTION	Hourly Rate	Daily Rate
½ Ton Pick-up	\$.00	
¾ Ton Pick-up w/Utility Body	\$.00	
1 Ton Pick-up w/Lift Gate	\$.00	
1997 Ford F800 Flat Bed Dump	\$.00	
Ford Expedition	\$.00	
Ford Explorer	\$.00	
J.D. 410E Backhoe/Loader	\$.00	
J.D. 410G Backhoe/Loader	\$.00	
J.D. 850 XUV Gator	\$.00	
John Deere 624G Loader	\$.00	
Gradall 544-D10 Forklift	\$.00	
Ford Boom Truck	\$.00	
Concrete Saw		\$.00/day
Air Compressor/Breaker	\$.00	
Sandblast Equipment Set-up		\$.00/day
Honda Portable Generator		\$.00/day
Hi-Cycle Generator		\$.00/day
20 KW Diesel Generator		\$.00/day
Large Conduit Bender		\$.00/day
Large Pipe Threader		\$.00/day
Large Wire Tugger		\$.00/day
Termination Lug Compression Eq.		\$.00/day